SEQUENCE LISTING

<110> NAKAMURA, Norimasa; MATSUDA, Hikaru; SAWA, Yoshiki; TAKETANI, Satoshi;MIYAGAWA, Shigeru; YOSHIKAWA, Hideki; ANDO, Wataru

<120> SCAFFOLD-FREE SELF-ORGANIZED 3D SYNTHETIC TISSUE

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gcc act tca gcc cag att gag ttg aac aag aag cgg gag gct gag 3633
Ala Thr Ser Ala Gln Ile Glu Leu Asn Lys Lys Arg Glu Ala Glu
1160 1165 1170

ttc cag aaa atg cgc agg gac ctg gaa gag tcc acc ctg cag cac 3678
Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ser Thr Leu Gln His
1175 1180 1185

gaa gcc acg gca gct gct ctt cgg aag aag cac gca gat agt gtg 3723

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Glu  Ala Thr Ala Ala Ala  Leu Arg Lys Lys His  Ala Asp Ser Val
1190                 1195                 1200

gct  gag ctt ggg aag cag  atc gac agc ctt cag  cgg gtc aag cag      3768
Ala  Glu Leu Gly Lys Gln  Ile Asp Ser Leu Gln  Arg Val Lys Gln
1205                 1210                 1215

aag  ctg gag aag gaa aag  agt gag ctg aag atg  gag atc aat gac      3813
Lys  Leu Glu Lys Glu Lys  Ser Glu Leu Lys Met  Glu Ile Asn Asp
1220                 1225                 1230

ctt  gct agt aac atg gag  act gtc tcc aaa gcc  aag gca aac ttt      3858
Leu  Ala Ser Asn Met Glu  Thr Val Ser Lys Ala  Lys Ala Asn Phe
1235                 1240                 1245

gag  aaa atg tgc cgc acc  cta gag gac cag ctt  agt gaa ata aaa      3903
Glu  Lys Met Cys Arg Thr  Leu Glu Asp Gln Leu  Ser Glu Ile Lys
1250                 1255                 1260

aca  aag gaa gaa gag cag  caa cgc tta ata aat  gag ttg tca gcc      3948
Thr  Lys Glu Glu Glu Gln  Gln Arg Leu Ile Asn  Glu Leu Ser Ala
1265                 1270                 1275

cag  aag gca cgt tta cac  aca gaa tca ggt gag  ttt tca cga cag      3993
Gln  Lys Ala Arg Leu His  Thr Glu Ser Gly Glu  Phe Ser Arg Gln
1280                 1285                 1290

cta  gat gaa aaa gat gct  atg gtt tct cag cta  tcc cga ggc aaa      4038
Leu  Asp Glu Lys Asp Ala  Met Val Ser Gln Leu  Ser Arg Gly Lys
1295                 1300                 1305

caa  gca ttt aca caa cag  att gaa gaa tta aag  agg cag cta gaa      4083
Gln  Ala Phe Thr Gln Gln  Ile Glu Glu Leu Lys  Arg Gln Leu Glu
1310                 1315                 1320

gag  gag act aag gcc aag  agc act ctg gcc cat  gcc ctg cag tca      4128
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Glu  Glu Thr Lys Ala Lys  Ser Thr Leu Ala His  Ala Leu Gln Ser
1325                 1330                 1335

gcc  cgc cat gac tgt gac  ctg ctg cgg gaa cag  tat gag gag gag      4173
Ala  Arg His Asp Cys Asp  Leu Leu Arg Glu Gln  Tyr Glu Glu Glu
1340                 1345                 1350

cag  gaa gcc aag gct gag  ctg cag agg gga atg  tcc aag gcc aac      4218
Gln  Glu Ala Lys Ala Glu  Leu Gln Arg Gly Met  Ser Lys Ala Asn
1355                 1360                 1365

agt  gag gtt gcc cag tgg  agg acc aag tac gag  acg gac gcc atc      4263
Ser  Glu Val Ala Gln Trp  Arg Thr Lys Tyr Glu  Thr Asp Ala Ile
1370                 1375                 1380

cag  cgc aca gag gag ctg  gag gag gcc aag aag  aag cta gcc cag      4308
Gln  Arg Thr Glu Glu Leu  Glu Glu Ala Lys Lys  Lys Leu Ala Gln
1385                 1390                 1395

cgt  ctg cag gat gca gaa  gaa cat gta gaa gct  gtg aat tcc aaa      4353
Arg  Leu Gln Asp Ala Glu  Glu His Val Glu Ala  Val Asn Ser Lys
1400                 1405                 1410

tgt  gct tct ctt gaa aag  aca aag cag agg cta  cag aat gaa gta      4398
Cys  Ala Ser Leu Glu Lys  Thr Lys Gln Arg Leu  Gln Asn Glu Val
1415                 1420                 1425

gag  gac ctc atg att gat  gtg gaa cga tct aat  gct gcc tgc ata      4443
Glu  Asp Leu Met Ile Asp  Val Glu Arg Ser Asn  Ala Ala Cys Ile
1430                 1435                 1440

gct  ctc gat aag aag caa  aga aac ttt gac aag  gtt ctg gca gaa      4488
Ala  Leu Asp Lys Lys Gln  Arg Asn Phe Asp Lys  Val Leu Ala Glu
1445                 1450                 1455

tgg  aaa cag aag tat gag  gaa act cag gct gaa  ctt gag gcc tcc      4533
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Trp  Lys Gln Lys Tyr Glu  Glu Thr Gln Ala Glu  Leu Glu Ala Ser
1460                1465                1470

cag  aag gag tcg cgt tct  ctc agc act gag ctg  ttc aag gtg aag      4578
Gln  Lys Glu Ser Arg Ser  Leu Ser Thr Glu Leu  Phe Lys Val Lys
1475                1480                1485

aat  gcc tac gag gaa tcc  ctg gat cat ctt gaa  act cta aag cga      4623
Asn  Ala Tyr Glu Glu Ser  Leu Asp His Leu Glu  Thr Leu Lys Arg
1490                1495                1500

gag  aat aag aac tta caa  cag gag att tct gac  ctg aca gag caa      4668
Glu  Asn Lys Asn Leu Gln  Gln Glu Ile Ser Asp  Leu Thr Glu Gln
1505                1510                1515

att  gca gag ggt gga aag  cat atc cat gaa ctg  gag aaa gta aag      4713
Ile  Ala Glu Gly Gly Lys  His Ile His Glu Leu  Glu Lys Val Lys
1520                1525                1530

aaa  caa ctt gat cat gag  aag agt gaa cta cag  act tcc cta gag      4758
Lys  Gln Leu Asp His Glu  Lys Ser Glu Leu Gln  Thr Ser Leu Glu
1535                1540                1545

gaa  gca gag gca tct ctt  gag cat gaa gaa ggc  aaa att ctt cgc      4803
Glu  Ala Glu Ala Ser Leu  Glu His Glu Glu Gly  Lys Ile Leu Arg
1550                1555                1560

att  caa ctt gag cta aat  cag gtg aaa tct gag  att gac cga aaa      4848
Ile  Gln Leu Glu Leu Asn  Gln Val Lys Ser Glu  Ile Asp Arg Lys
1565                1570                1575

att  gct gaa aaa gat gaa  gaa ctc gat cag cta  aag agg aac cat      4893
Ile  Ala Glu Lys Asp Glu  Glu Leu Asp Gln Leu  Lys Arg Asn His
1580                1585                1590

ctc  aga gtt gtg gag tca  atg cag agt aca ctg  gat gct gag atc      4938
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Leu  Arg Val Val Glu Ser  Met Gln Ser Thr Leu  Asp Ala Glu Ile
1595                1600                1605

agg  agc aga aat gat gct  ctg agg atc aag aag  aag atg gag gga      4983
Arg  Ser Arg Asn Asp Ala  Leu Arg Ile Lys Lys  Lys Met Glu Gly
1610                1615                1620

gat  ctt aat gaa atg gaa  atc cag ctg aac cat  gcc aac cgc cag      5028
Asp  Leu Asn Glu Met Glu  Ile Gln Leu Asn His  Ala Asn Arg Gln
1625                1630                1635

gct  gct gag gca cta agg  aat ctt aga aac aca  caa gga ata ctg      5073
Ala  Ala Glu Ala Leu Arg  Asn Leu Arg Asn Thr  Gln Gly Ile Leu
1640                1645                1650

aag  gac act cag cta cat  ttg gat gat gcc atc  aga ggc caa gat      5118
Lys  Asp Thr Gln Leu His  Leu Asp Asp Ala Ile  Arg Gly Gln Asp
1655                1660                1665

gac  ctt aag gaa caa ttg  gca atg gtt gag cgc  aga gct aac ctg      5163
Asp  Leu Lys Glu Gln Leu  Ala Met Val Glu Arg  Arg Ala Asn Leu
1670                1675                1680

atg  cag gct gaa gtt gaa  gag ctc agg gca tcc  ctg gaa cgg act      5208
Met  Gln Ala Glu Val Glu  Glu Leu Arg Ala Ser  Leu Glu Arg Thr
1685                1690                1695

gag  aga ggc agg aaa atg  gca gag caa gag ctt  ctg gat gcc agt      5253
Glu  Arg Gly Arg Lys Met  Ala Glu Gln Glu Leu  Leu Asp Ala Ser
1700                1705                1710

gaa  cgt gtg caa ctt ctg  cac act cag aac acc  agc ctg atc aac      5298
Glu  Arg Val Gln Leu Leu  His Thr Gln Asn Thr  Ser Leu Ile Asn
1715                1720                1725

acc  aag aag aag ctg gaa  aca gac att tcc caa  atc cag gga gag      5343
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Thr  Lys Lys Lys Leu Glu  Thr Asp Ile Ser Gln  Ile Gln Gly Glu
1730                1735                1740

atg  gag gac atc gtc cag  gaa gcc cgc aat gca  gag gag aag gcc      5388
Met  Glu Asp Ile Val Gln  Glu Ala Arg Asn Ala  Glu Glu Lys Ala
1745                1750                1755

aag  aag gcc atc act gat  gct gcc atg atg gct  gag gag ctg aag      5433
Lys  Lys Ala Ile Thr Asp  Ala Ala Met Met Ala  Glu Glu Leu Lys
1760                1765                1770

aag  gaa cag gac acc agc  gcc cac ctg gag cgg  atg aag aag aac      5478
Lys  Glu Gln Asp Thr Ser  Ala His Leu Glu Arg  Met Lys Lys Asn
1775                1780                1785

atg  gag cag acc gtg aag  gat ctg cag ctc cgt  ctg ggt gag gct      5523
Met  Glu Gln Thr Val Lys  Asp Leu Gln Leu Arg  Leu Gly Glu Ala
1790                1795                1800

gag  cag ctg gcg ctg aag  ggt ggg aag aag cag  atc cag aaa ctg      5568
Glu  Gln Leu Ala Leu Lys  Gly Gly Lys Lys Gln  Ile Gln Lys Leu
1805                1810                1815

gag  gcc agg gtg aga gag  ctt gaa agt gag gtg  gaa agt gaa cag      5613
Glu  Ala Arg Val Arg Glu  Leu Glu Ser Glu Val  Glu Ser Glu Gln
1820                1825                1830

aag  cac aat gtt gag gct  gtc aag ggt ctt cgc  aaa cat gag aga      5658
Lys  His Asn Val Glu Ala  Val Lys Gly Leu Arg  Lys His Glu Arg
1835                1840                1845

aga  gtg aag gaa ctc act  tac cag act gag gag  gac cgc aag aat      5703
Arg  Val Lys Glu Leu Thr  Tyr Gln Thr Glu Glu  Asp Arg Lys Asn
1850                1855                1860

att  ctc agg ctg cag gac  ttg gtg gac aaa ttg  caa acc aaa gtc      5748
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Ile  Leu Arg Leu Gln Asp  Leu Val Asp Lys Leu  Gln Thr Lys Val
1865                 1870                 1875

aaa  gct tac aag aga caa  gct gaa gag gct gag  gaa caa tcc aat      5793
Lys  Ala Tyr Lys Arg Gln  Ala Glu Glu Ala Glu  Glu Gln Ser Asn
1880                 1885                 1890

gtc  aac ctt gcc aag ttc  cgc aag ctc cag cac  gag ctg gag gag      5838
Val  Asn Leu Ala Lys Phe  Arg Lys Leu Gln His  Glu Leu Glu Glu
1895                 1900                 1905

gcc  gag gaa cgg gct gac  att gct gag tcc caa  gtc aac aag ctg      5883
Ala  Glu Glu Arg Ala Asp  Ile Ala Glu Ser Gln  Val Asn Lys Leu
1910                 1915                 1920

aga  gtg aag agt cgg gag  gtt cac aca aaa gtc  ata agt gaa gag      5928
Arg  Val Lys Ser Arg Glu  Val His Thr Lys Val  Ile Ser Glu Glu
1925                 1930                 1935

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ttctttgtca ctgtcctgta tatcaaggaa ataaa                            6016
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Leu Arg Lys Ser Glu Lys Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe
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Asp Ala Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Tyr Val
35 40 45

Lys Ala Ile Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
50 55 60

Glu Ala Gly Ala Thr Val Thr Val Lys Glu Asp Gln Val Phe Ser Met
65 70 75 80

Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
85 90 95

Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
100 105 110

Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
115 120 125

Tyr Lys Trp Leu Pro Val Tyr Asn Pro Glu Val Val Thr Ala Tyr Arg
130 135 140

Gly Lys Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145 150 155 160

Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu

165 170 175

Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
180 185 190

Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
195 200 205

Glu Pro Ala Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile
210 215 220

Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225 230 235 240

Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
245 250 255

Ala Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
260 265 270

Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
275 280 285

Phe Tyr Gln Ile Leu Ser Asn Lys Lys Pro Glu Leu Ile Glu Met Leu
290 295 300

Leu Ile Thr Thr Asn Pro Tyr Asp Phe Ala Phe Val Ser Gln Gly Glu

305 310 315 320

Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
325 330 335

Ser Ala Val Asp Ile Leu Gly Phe Thr Ala Asp Glu Lys Val Ala Ile
340 345 350

Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys
355 360 365

Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
370 375 380

Asp Lys Ala Ala Tyr Leu Thr Ser Leu Asn Ser Ala Asp Leu Leu Lys
385 390 395 400

Ser Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Phe Val Thr Lys
405 410 415

Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
420 425 430

Ala Ile Tyr Glu Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
435 440 445

Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp

450 455 460

Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465 470 475 480

Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
485 490 495

Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Glu
500 505 510

Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
515 520 525

Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
530 535 540

Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu
545 550 555 560

Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
565 570 575

Glu Ala His Phe Ser Leu Val His Tyr Ala Gly Thr Val Asp Tyr Asn
580 585 590

Ile Ala Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val

595 600 605

Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Phe Leu Phe
610 615 620

Ser Gly Ala Gln Thr Ala Glu Ala Glu Gly Gly Gly Gly Lys Lys Gly
625 630 635 640

Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
645 650 655

Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His
660 665 670

Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
675 680 685

Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu
690 695 700

Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705 710 715 720

Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
725 730 735

Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser

740 745 750

Ile Glu Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
755 760 765

Phe Lys Ala Gly Leu Leu Gly Thr Leu Glu Glu Met Arg Asp Glu Lys
770 775 780

Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Ile Cys Arg Gly Phe Leu
785 790 795 800

Met Arg Val Glu Phe Arg Lys Met Met Glu Arg Arg Glu Ser Ile Phe
805 810 815

Cys Ile Gln Tyr Asn Ile Arg Ala Phe Met Asn Val Lys His Trp Pro
820 825 830

Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu
835 840 845

Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
850 855 860

Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
865 870 875 880

Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln

885 890 895

Ala Glu Ala Asp Ala Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
900 905 910

Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
915 920 925

Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
930 935 940

Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
945 950 955 960

Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
965 970 975

Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
980 985 990

Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln
995 1000 1005

Gln Thr Leu Asp Asp Leu Gln Met Glu Glu Asp Lys Val Asn Thr
1010 1015 1020

Leu Thr Lys Ala Lys Thr Lys Leu Glu Gln Gln Val Asp Asp Leu

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Glu Gly Ser Leu Glu Gln Glu Lys Lys Leu Cys Met Asp Leu Glu
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Arg Ala Lys Arg Lys Leu Glu Gly Asp Leu Lys Leu Ala Gln Glu
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Ser Thr Met Asp Thr Glu Asn Asp Lys Gln Gln Leu Asn Glu Lys
1070 1075 1080

Leu Lys Lys Lys Glu Phe Glu Met Ser Asn Leu Gln Gly Lys Ile
1085 1090 1095

Glu Asp Glu Gln Ala Leu Ala Met Gln Leu Gln Lys Lys Ile Lys
1100 1105 1110

Glu Leu Gln Ala Arg Ile Glu Glu Leu Glu Glu Glu Ile Glu Ala
1115 1120 1125

Glu Arg Ala Ser Arg Ala Lys Ala Glu Lys Gln Arg Ser Asp Leu
1130 1135 1140

Ser Arg Glu Leu Glu Glu Ile Ser Glu Arg Leu Glu Glu Ala Gly
1145 1150 1155

Gly Ala Thr Ser Ala Gln Ile Glu Leu Asn Lys Lys Arg Glu Ala

1160 1165 1170

Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ser Thr Leu Gln
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His Glu Ala Thr Ala Ala Ala Leu Arg Lys Lys His Ala Asp Ser
1190 1195 1200

Val Ala Glu Leu Gly Lys Gln Ile Asp Ser Leu Gln Arg Val Lys
1205 1210 1215

Gln Lys Leu Glu Lys Glu Lys Ser Glu Leu Lys Met Glu Ile Asn
1220 1225 1230

Asp Leu Ala Ser Asn Met Glu Thr Val Ser Lys Ala Lys Ala Asn
1235 1240 1245

Phe Glu Lys Met Cys Arg Thr Leu Glu Asp Gln Leu Ser Glu Ile
1250 1255 1260

Lys Thr Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Glu Leu Ser
1265 1270 1275

Ala Gln Lys Ala Arg Leu His Thr Glu Ser Gly Glu Phe Ser Arg
1280 1285 1290

Gln Leu Asp Glu Lys Asp Ala Met Val Ser Gln Leu Ser Arg Gly

1295 1300 1305

Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln Leu
1310 1315 1320

Glu Glu Glu Thr Lys Ala Lys Ser Thr Leu Ala His Ala Leu Gln
1325 1330 1335

Ser Ala Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu
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Glu Gln Glu Ala Lys Ala Glu Leu Gln Arg Gly Met Ser Lys Ala
1355 1360 1365

Asn Ser Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala
1370 1375 1380

Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala
1385 1390 1395

Gln Arg Leu Gln Asp Ala Glu Glu His Val Glu Ala Val Asn Ser
1400 1405 1410

Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln Asn Glu
1415 1420 1425

Val Glu Asp Leu Met Ile Asp Val Glu Arg Ser Asn Ala Ala Cys

1430 1435 1440

Ile Ala Leu Asp Lys Lys Gln Arg Asn Phe Asp Lys Val Leu Ala
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Glu Trp Lys Gln Lys Tyr Glu Glu Thr Gln Ala Glu Leu Glu Ala
1460 1465 1470

Ser Gln Lys Glu Ser Arg Ser Leu Ser Thr Glu Leu Phe Lys Val
1475 1480 1485

Lys Asn Ala Tyr Glu Glu Ser Leu Asp His Leu Glu Thr Leu Lys
1490 1495 1500

Arg Glu Asn Lys Asn Leu Gln Gln Glu Ile Ser Asp Leu Thr Glu
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Gln Ile Ala Glu Gly Gly Lys His Ile His Glu Leu Glu Lys Val
1520 1525 1530

Lys Lys Gln Leu Asp His Glu Lys Ser Glu Leu Gln Thr Ser Leu
1535 1540 1545

Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu
1550 1555 1560

Arg Ile Gln Leu Glu Leu Asn Gln Val Lys Ser Glu Ile Asp Arg

1565 1570 1575

Lys Ile Ala Glu Lys Asp Glu Glu Leu Asp Gln Leu Lys Arg Asn
1580 1585 1590

His Leu Arg Val Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
1595 1600 1605

Ile Arg Ser Arg Asn Asp Ala Leu Arg Ile Lys Lys Lys Met Glu
1610 1615 1620

Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg
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Gln Ala Ala Glu Ala Leu Arg Asn Leu Arg Asn Thr Gln Gly Ile
1640 1645 1650

Leu Lys Asp Thr Gln Leu His Leu Asp Asp Ala Ile Arg Gly Gln
1655 1660 1665

Asp Asp Leu Lys Glu Gln Leu Ala Met Val Glu Arg Arg Ala Asn
1670 1675 1680

Leu Met Gln Ala Glu Val Glu Glu Leu Arg Ala Ser Leu Glu Arg
1685 1690 1695

Thr Glu Arg Gly Arg Lys Met Ala Glu Gln Glu Leu Leu Asp Ala

1700 1705 1710

Ser Glu Arg Val Gln Leu Leu His Thr Gln Asn Thr Ser Leu Ile
1715 1720 1725

Asn Thr Lys Lys Lys Leu Glu Thr Asp Ile Ser Gln Ile Gln Gly
1730 1735 1740

Glu Met Glu Asp Ile Val Gln Glu Ala Arg Asn Ala Glu Glu Lys
1745 1750 1755

Ala Lys Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu Glu Leu
1760 1765 1770

Lys Lys Glu Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys Lys
1775 1780 1785

Asn Met Glu Gln Thr Val Lys Asp Leu Gln Leu Arg Leu Gly Glu
1790 1795 1800

Ala Glu Gln Leu Ala Leu Lys Gly Gly Lys Lys Gln Ile Gln Lys
1805 1810 1815

Leu Glu Ala Arg Val Arg Glu Leu Glu Ser Glu Val Glu Ser Glu
1820 1825 1830

Gln Lys His Asn Val Glu Ala Val Lys Gly Leu Arg Lys His Glu

1835 1840 1845

Arg Arg Val Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp Arg Lys
1850 1855 1860

Asn Ile Leu Arg Leu Gln Asp Leu Val Asp Lys Leu Gln Thr Lys
1865 1870 1875

Val Lys Ala Tyr Lys Arg Gln Ala Glu Glu Ala Glu Glu Gln Ser
1880 1885 1890

Asn Val Asn Leu Ala Lys Phe Arg Lys Leu Gln His Glu Leu Glu
1895 1900 1905

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Leu Arg Lys Ser Glu Arg Glu Arg Ile Glu Ala Gln Asn Lys Pro Phe
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Asp Ala Lys Thr Ser Val Phe Val Val Asp Pro Lys Glu Ser Phe Val
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Lys Ala Thr Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
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gaa gct gga gct act gta aca gtg aaa gat gac caa gtc ttc ccc atg     240
Glu Ala Gly Ala Thr Val Thr Val Lys Asp Asp Gln Val Phe Pro Met
65                  70                  75                  80

aac cct ccc aaa tat gac aag atc gag gac atg gcc atg atg act cat     288
Asn Pro Pro Lys Tyr Asp Lys Ile Glu Asp Met Ala Met Met Thr His
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cta cac gag cct gct gtg ctg tac aac ctc aaa gag cgc tac gca gcc     336
Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
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Trp Met Ile Tyr Thr Tyr Ser Gly Leu Phe Cys Val Thr Val Asn Pro
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Tyr Lys Trp Leu Pro Val Tyr Asn Ala Glu Val Val Thr Ala Tyr Arg
130 135 140

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Gly Lys Lys Arg Gln Glu Ala Pro Pro His Ile Phe Ser Ile Ser Asp
145 150 155 160

aat gcc tat cag ttc atg ctg act gat cgg gag aat cag tct atc ttg 528
Asn Ala Tyr Gln Phe Met Leu Thr Asp Arg Glu Asn Gln Ser Ile Leu
165 170 175

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Ile Thr Gly Glu Ser Gly Ala Gly Lys Thr Val Asn Thr Lys Arg Val
180 185 190

atc cag tac ttt gca aca att gca gtt act ggg gag aag aag aag gaa 624
Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
195 200 205

gaa gtt act tct ggc aaa atg cag ggg act ctg gaa gat caa atc atc 672
Glu Val Thr Ser Gly Lys Met Gln Gly Thr Leu Glu Asp Gln Ile Ile
210 215 220

agt gcc aac ccc cta ctg gag gcc ttt ggc aac gcc aag acc gtg agg 720
Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
225 230 235 240

aat gac aac tcc tct cgc ttt ggt aaa ttc atc agg atc cac ttc ggt 768
Asn Asp Asn Ser Ser Arg Phe Gly Lys Phe Ile Arg Ile His Phe Gly
245 250 255

acc aca ggg aaa ctg gct tct gct gat att gaa aca tat ctt ctg gag 816
Thr Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu

260 265 270

aag tct aga gtt act ttc cag cta aag gct gaa aga agc tat cat att 864
Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
275 280 285

ttt tat cag atc atg tct aac aag aag cca gat cta att gaa atg ctc 912
Phe Tyr Gln Ile Met Ser Asn Lys Lys Pro Asp Leu Ile Glu Met Leu
290 295 300

ctg atc acc acc aac cca tac gat tat gcc ttc gtc agt caa ggg gag 960
Leu Ile Thr Thr Asn Pro Tyr Asp Tyr Ala Phe Val Ser Gln Gly Glu
305 310 315 320

atc aca gtg ccc agc att gat gac caa gaa gag ttg atg gct aca gat 1008
Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
325 330 335

agt gcc att gaa att ctg ggc ttt act tca gat gaa aga gtg tcc atc 1056
Ser Ala Ile Glu Ile Leu Gly Phe Thr Ser Asp Glu Arg Val Ser Ile
340 345 350

tat aag ctc aca ggg gct gtg atg cat tat ggg aac atg aaa ttc aag 1104
Tyr Lys Leu Thr Gly Ala Val Met His Tyr Gly Asn Met Lys Phe Lys
355 360 365

caa aag cag cgt gag gag caa gct gag cca gat ggc act gaa gtt gct 1152
Gln Lys Gln Arg Glu Glu Gln Ala Glu Pro Asp Gly Thr Glu Val Ala
370 375 380

gac aag gca gcc tat ctc caa aat ctg aac tct gca gat ctg ctc aaa 1200
Asp Lys Ala Ala Tyr Leu Gln Asn Leu Asn Ser Ala Asp Leu Leu Lys
385 390 395 400

gcc ctc tgc tac cct agg gtc aag gtc ggc aat gag tat gtc acc aaa 1248
Ala Leu Cys Tyr Pro Arg Val Lys Val Gly Asn Glu Tyr Val Thr Lys

405 410 415

ggt caa act gtg cag cag gtg tac aat gca gtg ggt gct ctg gcc aaa 1296
Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
420 425 430

gct gtc tac gat aag atg ttc ttg tgg atg gtc acc cgc atc aac cag 1344
Ala Val Tyr Asp Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
435 440 445

cag ctg gac acc aag cag ccc agg cag tac ttc att ggg gtc ttg gac 1392
Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp
450 455 460

att gct ggc ttt gag atc ttt gat ttc aac agc ctg gag cag ctg tgc 1440
Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465 470 475 480

atc aac ttc acc aat gag aaa ctg caa cag ttt ttc aac cac cac atg 1488
Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
485 490 495

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Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr
500 505 510

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Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
515 520 525

aag cct atg ggc atc ttc tcc atc ctg gaa gag gag tgc atg ttc ccc 1632
Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
530 535 540

aag gcg aca gac acc tcc ttc aag aac aag ctg tat gaa caa cat ctt 1680
Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu

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Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
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Glu Ala His Phe Ser Leu Ile His Tyr Ala Gly Thr Val Asp Tyr Asn
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Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Leu Leu Phe
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Val Gly Ala Thr Gly Ala Glu Ala Glu Ala Gly Gly Gly Lys Lys Gly
625 630 635 640

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Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
645 650 655

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Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
675 680 685

gag cat gag ctt gtc ctg cat cag ctg agg tgt aac ggt gtg ctg gaa 2112
Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu

690 695 700

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Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705 710 715 720

gac ttc aaa cag aga tac aag gtg tta aat gca agt gct atc cct gaa 2208
Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
725 730 735

gga caa ttc atc gat agc aag aag gct tca gag aag ctc ctg ggg tcc 2256
Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser
740 745 750

att gac att gac cac acc cag tat aaa ttt ggt cac acc aag gtc ttt 2304
Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
755 760 765

ttc aaa gct ggt ctt ctg ggg ctc cta gag gag atg cga gat gag aag 2352
Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp Glu Lys
770 775 780

ctg gcc cag ctg att acc cga acc cag gcc atg tgc aga ggg ttc ttg 2400
Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Met Cys Arg Gly Phe Leu
785 790 795 800

gca aga gtg gag tac cag aaa atg gtg gaa aga aga gag tcc atc ttc 2448
Ala Arg Val Glu Tyr Gln Lys Met Val Glu Arg Arg Glu Ser Ile Phe
805 810 815

tgc atc cag tac aat gtc cgt gcc ttc atg aat gtc aag cac tgg ccc 2496
Cys Ile Gln Tyr Asn Val Arg Ala Phe Met Asn Val Lys His Trp Pro
820 825 830

tgg atg aag ctg tat ttc aag atc aaa ccc ctc ctc aaa agt gca gag 2544
Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu

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          835                 840                 845

aca gag aag gag atg gcc aac atg aag gaa gaa ttt gag aaa acc aaa     2592
Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
     850                 855                 860

gaa gag ctg gct aag acc gag gca aaa agg aaa gag ctg gaa gaa aaa     2640
Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
865                 870                 875                 880

atg gtg act ctg atg caa gaa aaa aat gac ttg caa ctc cag gtt caa     2688
Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln
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gct gaa gct gac agc ttg gct gat gca gag gaa agg tgt gac cag cta     2736
Ala Glu Ala Asp Ser Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
            900                 905                 910

atc aaa acc aaa atc cag cta gaa gcc aaa atc aaa gag gtg act gag     2784
Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
        915                 920                 925

aga gct gag gat gag gaa gag atc aat gct gag ctg aca gcc aag aag     2832
Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
    930                 935                 940

agg aaa ctg gag gat gaa tgt tca gaa ctc aag aaa gac att gat gac     2880
Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
945                 950                 955                 960

ctt gag ctg aca ctg gcc aag gtt gag aag gag aaa cat gcc aca gaa     2928
Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
                965                 970                 975

aac aag gtg aaa aac ctc aca gaa gag atg gcg ggt ctg gat gaa acc     2976
Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
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            980                 985                 990

att gct aag ctg acc aag gag aag  aag gct ctc cag gag  gcc cac cag   3024
Ile Ala Lys Leu Thr Lys Glu Lys  Lys Ala Leu Gln Glu  Ala His Gln
        995                 1000                1005

cag acc  ctg gat gac ctg cag  gca gag gag gac aaa  gtc aac acc      3069
Gln Thr  Leu Asp Asp Leu Gln  Ala Glu Glu Asp Lys  Val Asn Thr
    1010                1015                1020

ctg acc  aaa gct aaa atc aaa  ctt gaa caa caa gtg  gat gat ctt     3114
Leu Thr  Lys Ala Lys Ile Lys  Leu Glu Gln Gln Val  Asp Asp Leu
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gaa gga  tct ttg gaa caa gaa  aag aaa atc cgg atg  gat cta gaa     3159
Glu Gly  Ser Leu Glu Gln Glu  Lys Lys Ile Arg Met  Asp Leu Glu
    1040                1045                1050

aga gca  aag aga aaa cta gag  gga gac cta aaa ttg  gct caa gaa     3204
Arg Ala  Lys Arg Lys Leu Glu  Gly Asp Leu Lys Leu  Ala Gln Glu
    1055                1060                1065

tcc gca  atg gat ata gaa aat  gac aaa caa caa ctt  gat gaa aag     3249
Ser Ala  Met Asp Ile Glu Asn  Asp Lys Gln Gln Leu  Asp Glu Lys
    1070                1075                1080

ctt aaa  aag aaa gag ttt gaa  atg agc ggt ctg caa  agc aag att     3294
Leu Lys  Lys Lys Glu Phe Glu  Met Ser Gly Leu Gln  Ser Lys Ile
    1085                1090                1095

gaa gat  gaa caa gcc ctt ggt  atg cag ctg cag aag  aaa atc aag     3339
Glu Asp  Glu Gln Ala Leu Gly  Met Gln Leu Gln Lys  Lys Ile Lys
    1100                1105                1110

gag tta  caa gcc cgc att gag  gag ctg gag gag gaa  atc gag gca     3384
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tcc cgg  gag ctg gag gag atc  agt gag agg ctg gaa  gaa gcc ggt     3474
Ser Arg  Glu Leu Glu Glu Ile  Ser Glu Arg Leu Glu  Glu Ala Gly
    1145                1150                1155

ggg gcc  acc tcg gcc cag att  gag atg aac aag aag  cgg gaa gct     3519
Gly Ala  Thr Ser Ala Gln Ile  Glu Met Asn Lys Lys  Arg Glu Ala
    1160                1165                1170

gag ttc  cag aaa atg cgc agg  gac ctg gag gag gcc  acc cta cag     3564
Glu Phe  Gln Lys Met Arg Arg  Asp Leu Glu Glu Ala  Thr Leu Gln
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cat gag  gcc acg gcg gcc acc  ctg agg aag aag cat  gca gat agt     3609
His Glu  Ala Thr Ala Ala Thr  Leu Arg Lys Lys His  Ala Asp Ser
    1190                1195                1200

gtg gcc  gag ctt ggg gag cag  att gac aac ctg cag  cga gtg aag     3654
Val Ala  Glu Leu Gly Glu Gln  Ile Asp Asn Leu Gln  Arg Val Lys
    1205                1210                1215

cag aag  ctg gag aag gag aag  agt gag atg aag atg  gag atc gat     3699
Gln Lys  Leu Glu Lys Glu Lys  Ser Glu Met Lys Met  Glu Ile Asp
    1220                1225                1230

gac ctt  gct agt aac atg gag  act gtc tcc aaa gcc  aag gga aac     3744
Asp Leu  Ala Ser Asn Met Glu  Thr Val Ser Lys Ala  Lys Gly Asn
    1235                1240                1245

ctt gaa  aag atg tgc cgc gct  cta gaa gat caa ctg  agt gaa att     3789
Leu Glu  Lys Met Cys Arg Ala  Leu Glu Asp Gln Leu  Ser Glu Ile
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    1250                1255                1260

aag acc  aag gaa gag gag cag  cag cgg ctg atc aat  gac ctc aca      3834
Lys Thr  Lys Glu Glu Glu Gln  Gln Arg Leu Ile Asn  Asp Leu Thr
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gca cag  aga gcg cgc ctg caa  aca gaa tca ggt gaa  tat tca cgc      3879
Ala Gln  Arg Ala Arg Leu Gln  Thr Glu Ser Gly Glu  Tyr Ser Arg
    1280                1285                1290

cag cta  gat gaa aag gac aca  cta gtt tca cag ctc  tcg agg ggc      3924
Gln Leu  Asp Glu Lys Asp Thr  Leu Val Ser Gln Leu  Ser Arg Gly
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aaa caa  gcc ttt act caa cag  att gag gaa ctg aaa  agg caa ctt      3969
Lys Gln  Ala Phe Thr Gln Gln  Ile Glu Glu Leu Lys  Arg Gln Leu
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gaa gag  gag ata aag gcc aag  agt gcc ctg gca cat  gcc ctg cag      4014
Glu Glu  Glu Ile Lys Ala Lys  Ser Ala Leu Ala His  Ala Leu Gln
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tcc tcc  cgc cat gac tgt gac  ctg ctg cgg gaa cag  tat gag gag      4059
Ser Ser  Arg His Asp Cys Asp  Leu Leu Arg Glu Gln  Tyr Glu Glu
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gag cag  gaa gcc aag gcc gag  cta cag aga gca atg  tcc aag gcc      4104
Glu Gln  Glu Ala Lys Ala Glu  Leu Gln Arg Ala Met  Ser Lys Ala
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aac agt  gag gtt gcc cag tgg  agg acc aaa tat gag  aca gat gcc      4149
Asn Ser  Glu Val Ala Gln Trp  Arg Thr Lys Tyr Glu  Thr Asp Ala
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atc cag  cgc aca gag gag ctg  gag gag gcc aag aag  aag ctg gct      4194
Ile Gln  Arg Thr Glu Glu Leu  Glu Glu Ala Lys Lys  Lys Leu Ala
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aaa tgt  gct tcc ctt gag aag  acg aag cag agg ctc  cag aat gaa      4284
Lys Cys  Ala Ser Leu Glu Lys  Thr Lys Gln Arg Leu  Gln Asn Glu
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gtt gag  gac ctc atg att gat  gtt gag agg aca aat  gct gcc tgt      4329
Val Glu  Asp Leu Met Ile Asp  Val Glu Arg Thr Asn  Ala Ala Cys
    1430                1435                1440

gcc gcc  ctg gac aaa aag caa  agg aac ttt gat aag  atc ctg gca      4374
Ala Ala  Leu Asp Lys Lys Gln  Arg Asn Phe Asp Lys  Ile Leu Ala
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gaa tgg  aaa cag aag tgt gaa  gaa act cat gct gaa  ctt gaa gct      4419
Glu Trp  Lys Gln Lys Cys Glu  Glu Thr His Ala Glu  Leu Glu Ala
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tct caa  aag gaa tcc cgc tca  ctc agc aca gaa cta  ttt aag att      4464
Ser Gln  Lys Glu Ser Arg Ser  Leu Ser Thr Glu Leu  Phe Lys Ile
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aag aat  gct tat gag gaa tct  tta gac caa ctt gaa  acc ttg aaa      4509
Lys Asn  Ala Tyr Glu Glu Ser  Leu Asp Gln Leu Glu  Thr Leu Lys
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cgg gaa  aat aag aat ctg cag  cag gag att tct gat  ctc act gaa      4554
Arg Glu  Asn Lys Asn Leu Gln  Gln Glu Ile Ser Asp  Leu Thr Glu
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Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu
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Lys Ile Ala Glu Lys Asp Glu Glu Ile Asp Gln Met Lys Arg Asn
1580 1585 1590

cac att aga atc gtg gag tcc atg cag agc aca ctg gat gct gag 4824
His Ile Arg Ile Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
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1910 1915 1920

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1925 1930 1935

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Lys Ala Thr Val Gln Ser Arg Glu Gly Gly Lys Val Thr Ala Lys Thr
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Glu Ala Gly Ala Thr Val Thr Val Lys Asp Asp Gln Val Phe Pro Met
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Leu His Glu Pro Ala Val Leu Tyr Asn Leu Lys Glu Arg Tyr Ala Ala
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Ile Gln Tyr Phe Ala Thr Ile Ala Val Thr Gly Glu Lys Lys Lys Glu
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Ser Ala Asn Pro Leu Leu Glu Ala Phe Gly Asn Ala Lys Thr Val Arg
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Thr Thr Gly Lys Leu Ala Ser Ala Asp Ile Glu Thr Tyr Leu Leu Glu
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Lys Ser Arg Val Thr Phe Gln Leu Lys Ala Glu Arg Ser Tyr His Ile
275 280 285

Phe Tyr Gln Ile Met Ser Asn Lys Lys Pro Asp Leu Ile Glu Met Leu
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Leu Ile Thr Thr Asn Pro Tyr Asp Tyr Ala Phe Val Ser Gln Gly Glu
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Ile Thr Val Pro Ser Ile Asp Asp Gln Glu Glu Leu Met Ala Thr Asp
325 330 335

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Gly Gln Thr Val Gln Gln Val Tyr Asn Ala Val Gly Ala Leu Ala Lys
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Ala Val Tyr Asp Lys Met Phe Leu Trp Met Val Thr Arg Ile Asn Gln
435 440 445

Gln Leu Asp Thr Lys Gln Pro Arg Gln Tyr Phe Ile Gly Val Leu Asp
450 455 460

Ile Ala Gly Phe Glu Ile Phe Asp Phe Asn Ser Leu Glu Gln Leu Cys
465 470 475 480

Ile Asn Phe Thr Asn Glu Lys Leu Gln Gln Phe Phe Asn His His Met
485 490 495

Phe Val Leu Glu Gln Glu Glu Tyr Lys Lys Glu Gly Ile Glu Trp Thr
500 505 510

Phe Ile Asp Phe Gly Met Asp Leu Ala Ala Cys Ile Glu Leu Ile Glu
515 520 525

Lys Pro Met Gly Ile Phe Ser Ile Leu Glu Glu Glu Cys Met Phe Pro
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Lys Ala Thr Asp Thr Ser Phe Lys Asn Lys Leu Tyr Glu Gln His Leu
545 550 555 560

Gly Lys Ser Asn Asn Phe Gln Lys Pro Lys Pro Ala Lys Gly Lys Pro
565 570 575

Glu Ala His Phe Ser Leu Ile His Tyr Ala Gly Thr Val Asp Tyr Asn
580 585 590

Ile Ala Gly Trp Leu Asp Lys Asn Lys Asp Pro Leu Asn Glu Thr Val
595 600 605

Val Gly Leu Tyr Gln Lys Ser Ala Met Lys Thr Leu Ala Leu Leu Phe
610 615 620

Val Gly Ala Thr Gly Ala Glu Ala Glu Ala Gly Gly Gly Lys Lys Gly
625 630 635 640

Gly Lys Lys Lys Gly Ser Ser Phe Gln Thr Val Ser Ala Leu Phe Arg
645 650 655

Glu Asn Leu Asn Lys Leu Met Thr Asn Leu Arg Ser Thr His Pro His
660 665 670

Phe Val Arg Cys Ile Ile Pro Asn Glu Thr Lys Thr Pro Gly Ala Met
675 680 685

Glu His Glu Leu Val Leu His Gln Leu Arg Cys Asn Gly Val Leu Glu
690 695 700

Gly Ile Arg Ile Cys Arg Lys Gly Phe Pro Ser Arg Ile Leu Tyr Ala
705 710 715 720

Asp Phe Lys Gln Arg Tyr Lys Val Leu Asn Ala Ser Ala Ile Pro Glu
725 730 735

Gly Gln Phe Ile Asp Ser Lys Lys Ala Ser Glu Lys Leu Leu Gly Ser
740 745 750

Ile Asp Ile Asp His Thr Gln Tyr Lys Phe Gly His Thr Lys Val Phe
755 760 765

Phe Lys Ala Gly Leu Leu Gly Leu Leu Glu Glu Met Arg Asp Glu Lys
770 775 780

Leu Ala Gln Leu Ile Thr Arg Thr Gln Ala Met Cys Arg Gly Phe Leu
785 790 795 800

Ala Arg Val Glu Tyr Gln Lys Met Val Glu Arg Arg Glu Ser Ile Phe
805 810 815

Cys Ile Gln Tyr Asn Val Arg Ala Phe Met Asn Val Lys His Trp Pro
820 825 830

Trp Met Lys Leu Tyr Phe Lys Ile Lys Pro Leu Leu Lys Ser Ala Glu
835 840 845

Thr Glu Lys Glu Met Ala Asn Met Lys Glu Glu Phe Glu Lys Thr Lys
850 855 860

Glu Glu Leu Ala Lys Thr Glu Ala Lys Arg Lys Glu Leu Glu Glu Lys
865 870 875 880

Met Val Thr Leu Met Gln Glu Lys Asn Asp Leu Gln Leu Gln Val Gln
885 890 895

Ala Glu Ala Asp Ser Leu Ala Asp Ala Glu Glu Arg Cys Asp Gln Leu
900 905 910

Ile Lys Thr Lys Ile Gln Leu Glu Ala Lys Ile Lys Glu Val Thr Glu
915 920 925

Arg Ala Glu Asp Glu Glu Glu Ile Asn Ala Glu Leu Thr Ala Lys Lys
930 935 940

Arg Lys Leu Glu Asp Glu Cys Ser Glu Leu Lys Lys Asp Ile Asp Asp
945 950 955 960

Leu Glu Leu Thr Leu Ala Lys Val Glu Lys Glu Lys His Ala Thr Glu
965 970 975

Asn Lys Val Lys Asn Leu Thr Glu Glu Met Ala Gly Leu Asp Glu Thr
980 985 990

Ile Ala Lys Leu Thr Lys Glu Lys Lys Ala Leu Gln Glu Ala His Gln
995 1000 1005

Gln Thr Leu Asp Asp Leu Gln Ala Glu Glu Asp Lys Val Asn Thr
1010 1015 1020

Leu Thr Lys Ala Lys Ile Lys Leu Glu Gln Gln Val Asp Asp Leu
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Glu Gly Ser Leu Glu Gln Glu Lys Lys Ile Arg Met Asp Leu Glu
1040 1045 1050

Arg Ala Lys Arg Lys Leu Glu Gly Asp Leu Lys Leu Ala Gln Glu
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Ser Ala Met Asp Ile Glu Asn Asp Lys Gln Gln Leu Asp Glu Lys
1070 1075 1080

Leu Lys Lys Lys Glu Phe Glu Met Ser Gly Leu Gln Ser Lys Ile
1085 1090 1095

Glu Asp Glu Gln Ala Leu Gly Met Gln Leu Gln Lys Lys Ile Lys
1100 1105 1110

Glu Leu Gln Ala Arg Ile Glu Glu Leu Glu Glu Glu Ile Glu Ala
1115 1120 1125

Glu Arg Ala Ser Arg Ala Lys Ala Glu Lys Gln Arg Ser Asp Leu
1130 1135 1140

Ser Arg Glu Leu Glu Glu Ile Ser Glu Arg Leu Glu Glu Ala Gly
1145 1150 1155

Gly Ala Thr Ser Ala Gln Ile Glu Met Asn Lys Lys Arg Glu Ala
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Glu Phe Gln Lys Met Arg Arg Asp Leu Glu Glu Ala Thr Leu Gln
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His Glu Ala Thr Ala Ala Thr Leu Arg Lys Lys His Ala Asp Ser
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Val Ala Glu Leu Gly Glu Gln Ile Asp Asn Leu Gln Arg Val Lys
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Gln Lys Leu Glu Lys Glu Lys Ser Glu Met Lys Met Glu Ile Asp
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Asp Leu Ala Ser Asn Met Glu Thr Val Ser Lys Ala Lys Gly Asn
1235 1240 1245

Leu Glu Lys Met Cys Arg Ala Leu Glu Asp Gln Leu Ser Glu Ile
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Lys Thr Lys Glu Glu Glu Gln Gln Arg Leu Ile Asn Asp Leu Thr
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Ala Gln Arg Ala Arg Leu Gln Thr Glu Ser Gly Glu Tyr Ser Arg
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Gln Leu Asp Glu Lys Asp Thr Leu Val Ser Gln Leu Ser Arg Gly
1295 1300 1305

Lys Gln Ala Phe Thr Gln Gln Ile Glu Glu Leu Lys Arg Gln Leu
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Glu Glu Glu Ile Lys Ala Lys Ser Ala Leu Ala His Ala Leu Gln
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Ser Ser Arg His Asp Cys Asp Leu Leu Arg Glu Gln Tyr Glu Glu
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Glu Gln Glu Ala Lys Ala Glu Leu Gln Arg Ala Met Ser Lys Ala
1355 1360 1365

Asn Ser Glu Val Ala Gln Trp Arg Thr Lys Tyr Glu Thr Asp Ala
1370 1375 1380

Ile Gln Arg Thr Glu Glu Leu Glu Glu Ala Lys Lys Lys Leu Ala
1385 1390 1395

Gln Arg Leu Gln Asp Ala Glu Glu His Val Glu Ala Val Asn Ala
1400 1405 1410

Lys Cys Ala Ser Leu Glu Lys Thr Lys Gln Arg Leu Gln Asn Glu
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Val Glu Asp Leu Met Ile Asp Val Glu Arg Thr Asn Ala Ala Cys
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Ala Ala Leu Asp Lys Lys Gln Arg Asn Phe Asp Lys Ile Leu Ala
1445 1450 1455

Glu Trp Lys Gln Lys Cys Glu Glu Thr His Ala Glu Leu Glu Ala
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Ser Gln Lys Glu Ser Arg Ser Leu Ser Thr Glu Leu Phe Lys Ile
1475 1480 1485

Lys Asn Ala Tyr Glu Glu Ser Leu Asp Gln Leu Glu Thr Leu Lys
1490 1495 1500

Arg Glu Asn Lys Asn Leu Gln Gln Glu Ile Ser Asp Leu Thr Glu
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Gln Ile Ala Glu Gly Gly Lys Arg Ile His Glu Leu Glu Lys Ile
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Lys Lys Gln Val Glu Gln Glu Lys Ser Glu Leu Gln Ala Ala Leu
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Glu Glu Ala Glu Ala Ser Leu Glu His Glu Glu Gly Lys Ile Leu
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Lys Ile Ala Glu Lys Asp Glu Glu Ile Asp Gln Met Lys Arg Asn
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His Ile Arg Ile Val Glu Ser Met Gln Ser Thr Leu Asp Ala Glu
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Ile Arg Ser Arg Asn Asp Ala Ile Arg Leu Lys Lys Lys Met Glu
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Gly Asp Leu Asn Glu Met Glu Ile Gln Leu Asn His Ala Asn Arg
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Met Ala Ala Glu Ala Leu Arg Asn Tyr Arg Asn Thr Gln Ala Ile
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Leu Lys Asp Thr Gln Leu His Leu Asp Asp Ala Leu Arg Ser Gln
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Glu Asp Leu Lys Glu Gln Leu Ala Met Val Glu Arg Arg Ala Asn
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Leu Leu Gln Ala Glu Ile Glu Glu Leu Arg Ala Thr Leu Glu Gln
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Thr Glu Arg Ser Arg Lys Ile Ala Glu Gln Glu Leu Leu Asp Ala
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Ser Glu Arg Val Gln Leu Leu His Thr Gln Asn Thr Ser Leu Ile
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Asn Thr Lys Lys Lys Leu Glu Thr Asp Ile Ser Gln Ile Gln Gly
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Glu Met Glu Asp Ile Ile Gln Glu Ala Arg Asn Ala Glu Glu Lys
1745 1750 1755

Ala Lys Lys Ala Ile Thr Asp Ala Ala Met Met Ala Glu Glu Leu
1760 1765 1770

Lys Lys Glu Gln Asp Thr Ser Ala His Leu Glu Arg Met Lys Lys
1775 1780 1785

Asn Leu Glu Gln Thr Val Lys Asp Leu Gln His Arg Leu Asp Glu
1790 1795 1800

Ala Glu Gln Leu Ala Leu Lys Gly Gly Lys Lys Gln Ile Gln Lys
1805 1810 1815

Leu Glu Ala Arg Val Arg Glu Leu Glu Gly Glu Val Glu Ser Glu
1820 1825 1830

Gln Lys Arg Asn Val Glu Ala Val Lys Gly Leu Arg Lys His Glu
1835 1840 1845

Arg Lys Val Lys Glu Leu Thr Tyr Gln Thr Glu Glu Asp Arg Lys
1850 1855 1860

Asn Ile Leu Arg Leu Gln Asp Leu Val Asp Lys Leu Gln Ala Lys
1865 1870 1875

Val Lys Ser Tyr Lys Arg Gln Ala Glu Glu Ala Glu Glu Gln Ser
1880 1885 1890

Asn Val Asn Leu Ser Lys Phe Arg Arg Ile Gln His Glu Leu Glu
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Leu Ile Trp Thr Leu Phe Phe Leu Gly Thr Ala Val Ser Leu Gln Val
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gat att gtt ccc agc cag ggg gag atc agc gtt gga gag tcc aaa ttc 151

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Asp Ile Val Pro Ser Gln Gly Glu Ile Ser Val Gly Glu Ser Lys Phe
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ttc tta tgc caa gtg gca gga gat gcc aaa gat aaa gac atc tcc tgg      199
Phe Leu Cys Gln Val Ala Gly Asp Ala Lys Asp Lys Asp Ile Ser Trp
    40                  45                  50

ttc tcc ccc aat gga gaa aag ctc acc cca aac cag cag cgg atc tca      247
Phe Ser Pro Asn Gly Glu Lys Leu Thr Pro Asn Gln Gln Arg Ile Ser
55                  60                  65                  70

gtg gtg tgg aat gat gat tcc tcc tcc acc ctc acc atc tat aac gcc      295
Val Val Trp Asn Asp Asp Ser Ser Ser Thr Leu Thr Ile Tyr Asn Ala
                75                  80                  85

aac atc gac gac gcc ggc att tac aag tgt gtg gtt aca ggc gag gat      343
Asn Ile Asp Asp Ala Gly Ile Tyr Lys Cys Val Val Thr Gly Glu Asp
            90                  95                  100

ggc agt gag tca gag gcc acc gtc aac gtg aag atc ttt cag aag ctc      391
Gly Ser Glu Ser Glu Ala Thr Val Asn Val Lys Ile Phe Gln Lys Leu
        105                 110                 115

atg ttc aag aat gcg cca acc cca cag gag ttc cgg gag ggg gaa gat      439
Met Phe Lys Asn Ala Pro Thr Pro Gln Glu Phe Arg Glu Gly Glu Asp
    120                 125                 130

gcc gtg att gtg tgt gat gtg gtc agc tcc ctc cca cca acc atc atc      487
Ala Val Ile Val Cys Asp Val Val Ser Ser Leu Pro Pro Thr Ile Ile
135                 140                 145                 150

tgg aaa cac aaa ggc cga gat gtc atc ctg aaa aaa gat gtc cga ttc      535
Trp Lys His Lys Gly Arg Asp Val Ile Leu Lys Lys Asp Val Arg Phe
                155                 160                 165

ata gtc ctg tcc aac aac tac ctg cag atc cgg ggc atc aag aaa aca      583
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Ile Val Leu Ser Asn Asn Tyr Leu Gln Ile Arg Gly Ile Lys Lys Thr
            170                 175                 180

gat gag ggc act tat cgc tgt gag ggc aga atc ctg gca cgg ggg gag      631
Asp Glu Gly Thr Tyr Arg Cys Glu Gly Arg Ile Leu Ala Arg Gly Glu
        185                 190                 195

atc aac ttc aag gac att cag gtc att gtg aat gtg cca cct acc atc      679
Ile Asn Phe Lys Asp Ile Gln Val Ile Val Asn Val Pro Pro Thr Ile
    200                 205                 210

cgg gcc agg cag aat att gtg aat gcc acc gcc aac ctc ggc cag tcc      727
Arg Ala Arg Gln Asn Ile Val Asn Ala Thr Ala Asn Leu Gly Gln Ser
215                 220                 225                 230

gtc acc ctg gtg tgc gat gcc gaa cgg ttc cca gag ccc acc atg agc      775
Val Thr Leu Val Cys Asp Ala Glu Arg Phe Pro Glu Pro Thr Met Ser
                235                 240                 245

tgg aca aag gat ggg gaa cag ata gag caa gag gaa gac gat gag aag      823
Trp Thr Lys Asp Gly Glu Gln Ile Glu Gln Glu Glu Asp Asp Glu Lys
            250                 255                 260

tac atc ttc agc gac gat agt tcc cag ctg acc atc aaa aag gtg gat      871
Tyr Ile Phe Ser Asp Asp Ser Ser Gln Leu Thr Ile Lys Lys Val Asp
        265                 270                 275

aag aac gac gag gct gag tac atc tgc att gct gag aac aag gct ggc      919
Lys Asn Asp Glu Ala Glu Tyr Ile Cys Ile Ala Glu Asn Lys Ala Gly
    280                 285                 290

gag cag gat gcg acc atc cac ctc aaa gtc ttt gca aaa ccc aaa atc      967
Glu Gln Asp Ala Thr Ile His Leu Lys Val Phe Ala Lys Pro Lys Ile
295                 300                 305                 310

aca tat gta gag aac cag act gcc atg gaa tta gag gag cag gtc act     1015
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Thr Tyr Val Glu Asn Gln Thr Ala Met Glu Leu Glu Glu Gln Val Thr
315 320 325

ctt acc tgt gaa gcc tcc gga gac ccc att ccc tcc atc acc tgg agg 1063
Leu Thr Cys Glu Ala Ser Gly Asp Pro Ile Pro Ser Ile Thr Trp Arg
330 335 340

act tct acc cgg aac atc agc agc gaa gaa aag act ctg gat ggg cac 1111
Thr Ser Thr Arg Asn Ile Ser Ser Glu Glu Lys Thr Leu Asp Gly His
345 350 355

atg gtg gtg cgt agc cat gcc cgt gtg tcg tcg ctg acc ctg aag agc 1159
Met Val Val Arg Ser His Ala Arg Val Ser Ser Leu Thr Leu Lys Ser
360 365 370

atc cag tac act gat gcc gga gag tac atc tgc acc gcc agc aac acc 1207
Ile Gln Tyr Thr Asp Ala Gly Glu Tyr Ile Cys Thr Ala Ser Asn Thr
375 380 385 390

atc ggc cag gac tcc cag tcc atg tac ctt gaa gtg caa tat gcc cca 1255
Ile Gly Gln Asp Ser Gln Ser Met Tyr Leu Glu Val Gln Tyr Ala Pro
395 400 405

aag cta cag ggc cct gtg gct gtg tac act tgg gag ggg aac cag gtg 1303
Lys Leu Gln Gly Pro Val Ala Val Tyr Thr Trp Glu Gly Asn Gln Val
410 415 420

aac atc acc tgc gag gta ttt gcc tat ccc agt gcc acg atc tca tgg 1351
Asn Ile Thr Cys Glu Val Phe Ala Tyr Pro Ser Ala Thr Ile Ser Trp
425 430 435

ttt cgg gat ggc cag ctg ctg cca agc tcc aat tac agc aat atc aag 1399
Phe Arg Asp Gly Gln Leu Leu Pro Ser Ser Asn Tyr Ser Asn Ile Lys
440 445 450

atc tac aac acc ccc tct gcc agc tat ctg gag gtg acc cca gac tct 1447

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Ile Tyr Asn Thr Pro Ser Ala Ser Tyr Leu Glu Val Thr Pro Asp Ser
455                 460                 465                 470

gag aat gat ttt ggg aac tac aac tgt act gca gtg aac cgc att ggg    1495
Glu Asn Asp Phe Gly Asn Tyr Asn Cys Thr Ala Val Asn Arg Ile Gly
                475                 480                 485

cag gag tcc ttc gaa ttc atc ctt gtt caa gca gac acc ccc tct tca    1543
Gln Glu Ser Phe Glu Phe Ile Leu Val Gln Ala Asp Thr Pro Ser Ser
            490                 495                 500

cca tcc atc gac cag gtg gag cca tac tcc agc aca gcc cag gtg cag    1591
Pro Ser Ile Asp Gln Val Glu Pro Tyr Ser Ser Thr Ala Gln Val Gln
        505                 510                 515

ttt gat gaa cca gag gcc aca ggt ggg gtg ccc atc ctc aaa tac aaa    1639
Phe Asp Glu Pro Glu Ala Thr Gly Gly Val Pro Ile Leu Lys Tyr Lys
    520                 525                 530

gct gag tgg aga gca gtg ggt gaa gaa gta tgg cat tcc aag tgg tat    1687
Ala Glu Trp Arg Ala Val Gly Glu Glu Val Trp His Ser Lys Trp Tyr
535                 540                 545                 550

gat gcc aag gaa gcc agc atg gag ggc atc gtc acc atc gtg ggc ctg    1735
Asp Ala Lys Glu Ala Ser Met Glu Gly Ile Val Thr Ile Val Gly Leu
                555                 560                 565

aag ccc gaa aca acg tac gcc gta agg ctg gcg gcg ctc aat ggc aaa    1783
Lys Pro Glu Thr Thr Tyr Ala Val Arg Leu Ala Ala Leu Asn Gly Lys
            570                 575                 580

ggg ctg ggt gag atc agc gcg gcc tcc gag ttc aag acg cag cca gtc    1831
Gly Leu Gly Glu Ile Ser Ala Ala Ser Glu Phe Lys Thr Gln Pro Val
        585                 590                 595

caa ggg gaa ccc agt gca cct aag ctc gaa ggg cag atg gga gag gat    1879
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Gln Gly Glu Pro Ser Ala Pro Lys Leu Glu Gly Gln Met Gly Glu Asp
    600                 605                 610

gga aac tct att aaa gtg aac ctg atc aag cag gat gac ggc ggc tcc     1927
Gly Asn Ser Ile Lys Val Asn Leu Ile Lys Gln Asp Asp Gly Gly Ser
615                 620                 625                 630

ccc atc aga cac tat ctg gtc agg tac cga gcg ctc tcc tcc gag tgg     1975
Pro Ile Arg His Tyr Leu Val Arg Tyr Arg Ala Leu Ser Ser Glu Trp
                635                 640                 645

aaa cca gag atc agg ctc ccg tct ggc agt gac cac gtc atg ctg aag     2023
Lys Pro Glu Ile Arg Leu Pro Ser Gly Ser Asp His Val Met Leu Lys
            650                 655                 660

tcc ctg gac tgg aat gct gag tat gag gtc tac gtg gtg gct gag aac     2071
Ser Leu Asp Trp Asn Ala Glu Tyr Glu Val Tyr Val Val Ala Glu Asn
        665                 670                 675

cag caa gga aaa tcc aag gcg gct cat ttt gtg ttc agg acc tcg gcc     2119
Gln Gln Gly Lys Ser Lys Ala Ala His Phe Val Phe Arg Thr Ser Ala
    680                 685                 690

cag ccc aca gcc atc cca gcc aac ggc agc ccc acc tca ggc ctg agc     2167
Gln Pro Thr Ala Ile Pro Ala Asn Gly Ser Pro Thr Ser Gly Leu Ser
695                 700                 705                 710

acc ggg gcc atc gtg ggc atc ctc atc gtc atc ttc gtc ctg ctc ctg     2215
Thr Gly Ala Ile Val Gly Ile Leu Ile Val Ile Phe Val Leu Leu Leu
                715                 720                 725

gtg gtt gtg gac atc acc tgc tac ttc ctg aac aag tgt ggc ctg ttc     2263
Val Val Val Asp Ile Thr Cys Tyr Phe Leu Asn Lys Cys Gly Leu Phe
            730                 735                 740

atg tgc att gcg gtc aac ctg tgt gga aaa gcc ggg ccc ggg gcc aag     2311
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Met Cys Ile Ala Val Asn Leu Cys Gly Lys Ala Gly Pro Gly Ala Lys
        745                 750                 755

ggc aag gac atg gag gag ggc aag gcc gcc ttc tcg aaa gat gag tcc     2359
Gly Lys Asp Met Glu Glu Gly Lys Ala Ala Phe Ser Lys Asp Glu Ser
    760                 765                 770

aag gag ccc atc gtg gag gtt cga acg gag gag gag agg acc cca aac     2407
Lys Glu Pro Ile Val Glu Val Arg Thr Glu Glu Glu Arg Thr Pro Asn
775                 780                 785                 790

cat gat gga ggg aaa cac aca gag ccc aac gag acc acg cca ctg acg     2455
His Asp Gly Gly Lys His Thr Glu Pro Asn Glu Thr Thr Pro Leu Thr
                795                 800                 805

gag ccc gag aag ggc ccc gta gaa gca aag cca gag tgc cag gag aca     2503
Glu Pro Glu Lys Gly Pro Val Glu Ala Lys Pro Glu Cys Gln Glu Thr
            810                 815                 820

gaa acg aag cca gcg cca gcc gaa gtc aag acg gtc ccc aat gac gcc     2551
Glu Thr Lys Pro Ala Pro Ala Glu Val Lys Thr Val Pro Asn Asp Ala
        825                 830                 835

aca cag aca aag gag aac gag agc aaa gca tga tgggtgaaga gaaccgagca   2604
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Val Gly Glu Ser Lys Phe Phe Leu Cys Gln Val Ala Gly Asp Ala Lys
        35                  40                  45

Asp Lys Asp Ile Ser Trp Phe Ser Pro Asn Gly Glu Lys Leu Thr Pro
    50                  55                  60

Asn Gln Gln Arg Ile Ser Val Val Trp Asn Asp Asp Ser Ser Ser Thr
65                  70                  75                  80

Leu Thr Ile Tyr Asn Ala Asn Ile Asp Asp Ala Gly Ile Tyr Lys Cys
                85                  90                  95

Val Val Thr Gly Glu Asp Gly Ser Glu Ser Glu Ala Thr Val Asn Val
            100                 105                 110

Lys Ile Phe Gln Lys Leu Met Phe Lys Asn Ala Pro Thr Pro Gln Glu
        115                 120                 125

Phe Arg Glu Gly Glu Asp Ala Val Ile Val Cys Asp Val Val Ser Ser
    130                 135                 140
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Leu Pro Pro Thr Ile Ile Trp Lys His Lys Gly Arg Asp Val Ile Leu
145 150 155 160

Lys Lys Asp Val Arg Phe Ile Val Leu Ser Asn Asn Tyr Leu Gln Ile
165 170 175

Arg Gly Ile Lys Lys Thr Asp Glu Gly Thr Tyr Arg Cys Glu Gly Arg
180 185 190

Ile Leu Ala Arg Gly Glu Ile Asn Phe Lys Asp Ile Gln Val Ile Val
195 200 205

Asn Val Pro Pro Thr Ile Arg Ala Arg Gln Asn Ile Val Asn Ala Thr
210 215 220

Ala Asn Leu Gly Gln Ser Val Thr Leu Val Cys Asp Ala Glu Arg Phe
225 230 235 240

Pro Glu Pro Thr Met Ser Trp Thr Lys Asp Gly Glu Gln Ile Glu Gln
245 250 255

Glu Glu Asp Asp Glu Lys Tyr Ile Phe Ser Asp Asp Ser Ser Gln Leu
260 265 270

Thr Ile Lys Lys Val Asp Lys Asn Asp Glu Ala Glu Tyr Ile Cys Ile
275 280 285

Ala Glu Asn Lys Ala Gly Glu Gln Asp Ala Thr Ile His Leu Lys Val
290 295 300

Phe Ala Lys Pro Lys Ile Thr Tyr Val Glu Asn Gln Thr Ala Met Glu
305 310 315 320

Leu Glu Glu Gln Val Thr Leu Thr Cys Glu Ala Ser Gly Asp Pro Ile
325 330 335

Pro Ser Ile Thr Trp Arg Thr Ser Thr Arg Asn Ile Ser Ser Glu Glu
340 345 350

Lys Thr Leu Asp Gly His Met Val Val Arg Ser His Ala Arg Val Ser
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Ser Leu Thr Leu Lys Ser Ile Gln Tyr Thr Asp Ala Gly Glu Tyr Ile
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Cys Thr Ala Ser Asn Thr Ile Gly Gln Asp Ser Gln Ser Met Tyr Leu
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Glu Val Gln Tyr Ala Pro Lys Leu Gln Gly Pro Val Ala Val Tyr Thr
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Trp Glu Gly Asn Gln Val Asn Ile Thr Cys Glu Val Phe Ala Tyr Pro
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Ser Ala Thr Ile Ser Trp Phe Arg Asp Gly Gln Leu Leu Pro Ser Ser
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Asn Tyr Ser Asn Ile Lys Ile Tyr Asn Thr Pro Ser Ala Ser Tyr Leu
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Glu Val Thr Pro Asp Ser Glu Asn Asp Phe Gly Asn Tyr Asn Cys Thr
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Ala Val Asn Arg Ile Gly Gln Glu Ser Phe Glu Phe Ile Leu Val Gln
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Ser Thr Ala Gln Val Gln Phe Asp Glu Pro Glu Ala Thr Gly Gly Val
515 520 525

Pro Ile Leu Lys Tyr Lys Ala Glu Trp Arg Ala Val Gly Glu Glu Val
530 535 540

Trp His Ser Lys Trp Tyr Asp Ala Lys Glu Ala Ser Met Glu Gly Ile
545 550 555 560

Val Thr Ile Val Gly Leu Lys Pro Glu Thr Thr Tyr Ala Val Arg Leu
565 570 575

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580 585 590

Phe Lys Thr Gln Pro Val Gln Gly Glu Pro Ser Ala Pro Lys Leu Glu
595 600 605

Gly Gln Met Gly Glu Asp Gly Asn Ser Ile Lys Val Asn Leu Ile Lys
610 615 620

Gln Asp Asp Gly Gly Ser Pro Ile Arg His Tyr Leu Val Arg Tyr Arg
625 630 635 640

Ala Leu Ser Ser Glu Trp Lys Pro Glu Ile Arg Leu Pro Ser Gly Ser
645 650 655

Asp His Val Met Leu Lys Ser Leu Asp Trp Asn Ala Glu Tyr Glu Val
660 665 670

Tyr Val Val Ala Glu Asn Gln Gln Gly Lys Ser Lys Ala Ala His Phe
675 680 685

Val Phe Arg Thr Ser Ala Gln Pro Thr Ala Ile Pro Ala Asn Gly Ser
690 695 700

Pro Thr Ser Gly Leu Ser Thr Gly Ala Ile Val Gly Ile Leu Ile Val
705 710 715 720

Ile Phe Val Leu Leu Leu Val Val Val Asp Ile Thr Cys Tyr Phe Leu
725 730 735

Asn Lys Cys Gly Leu Phe Met Cys Ile Ala Val Asn Leu Cys Gly Lys
740 745 750

Ala Gly Pro Gly Ala Lys Gly Lys Asp Met Glu Glu Gly Lys Ala Ala
755 760 765

Phe Ser Lys Asp Glu Ser Lys Glu Pro Ile Val Glu Val Arg Thr Glu
770 775 780

Glu Glu Arg Thr Pro Asn His Asp Gly Gly Lys His Thr Glu Pro Asn
785 790 795 800

Glu Thr Thr Pro Leu Thr Glu Pro Glu Lys Gly Pro Val Glu Ala Lys
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Pro Glu Cys Gln Glu Thr Glu Thr Lys Pro Ala Pro Ala Glu Val Lys
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atg gag cta ctg tcg cca ccg ctc cgc gac gta gac ctg acg gcc ccc 168
Met Glu Leu Leu Ser Pro Pro Leu Arg Asp Val Asp Leu Thr Ala Pro
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Asp Gly Ser Leu Cys Ser Phe Ala Thr Thr Asp Asp Phe Tyr Asp Asp
20 25 30

ccg tgt ttc gac tcc ccg gac ctg cgc ttc ttc gaa gac ctg gac ccg 264
Pro Cys Phe Asp Ser Pro Asp Leu Arg Phe Phe Glu Asp Leu Asp Pro
35 40 45

cgc ctg atg cac gtg ggc gcg ctc ctg aaa ccc gaa gag cac tcg cac 312
Arg Leu Met His Val Gly Ala Leu Leu Lys Pro Glu Glu His Ser His
50 55 60

ttc ccc gcg gcg gtg cac ccg gcc ccg ggc gca cgt gag gac gag cat 360
Phe Pro Ala Ala Val His Pro Ala Pro Gly Ala Arg Glu Asp Glu His
65 70 75 80

gtg cgc gcg ccc agc ggg cac cac cag gcg ggc cgc tgc cta ctg tgg 408
Val Arg Ala Pro Ser Gly His His Gln Ala Gly Arg Cys Leu Leu Trp
85 90 95

gcc tgc aag gcg tgc aag cgc aag acc acc aac gcc gac cgc cgc aag 456
Ala Cys Lys Ala Cys Lys Arg Lys Thr Thr Asn Ala Asp Arg Arg Lys
100 105 110

gcc gcc acc atg cgc gag cgg cgc cgc ctg agc aaa gta aat gag gcc 504
Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Ser Lys Val Asn Glu Ala
115 120 125

ttt gag aca ctc aag cgc tgc acg tcg agc aat cca aac cag cgg ttg 552
Phe Glu Thr Leu Lys Arg Cys Thr Ser Ser Asn Pro Asn Gln Arg Leu
130 135 140

ccc aag gtg gag atc ctg cgc aac gcc atc cgc tat atc gag ggc ctg 600
Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu Gly Leu
145 150 155 160

cag gct ctg ctg cgc gac cag gac gcc gcg ccc cct ggc gca gcc gcc 648
Gln Ala Leu Leu Arg Asp Gln Asp Ala Ala Pro Pro Gly Ala Ala Ala
165 170 175

ttc tat gcg ccg ggc ccg ctg ccc ccg ggc cgc ggc ggc gag cac tac 696
Phe Tyr Ala Pro Gly Pro Leu Pro Pro Gly Arg Gly Gly Glu His Tyr
180 185 190

agc ggc gac tcc gac gcg tcc agc ccg cgc tcc aac tgc tcc gac ggc 744
Ser Gly Asp Ser Asp Ala Ser Ser Pro Arg Ser Asn Cys Ser Asp Gly
195 200 205

atg atg gac tac agc ggc ccc ccg agc ggc gcc cgg cgg cgg aac tgc 792
Met Met Asp Tyr Ser Gly Pro Pro Ser Gly Ala Arg Arg Arg Asn Cys
210 215 220

tac gaa ggc gcc tac tac aac gag gcg ccc agc gaa ccc agg ccc ggg 840
Tyr Glu Gly Ala Tyr Tyr Asn Glu Ala Pro Ser Glu Pro Arg Pro Gly
225 230 235 240

aag agt gcg gcg gtg tcg agc cta gac tac ctg tcc agc atc gtg gag 888
Lys Ser Ala Ala Val Ser Ser Leu Asp Tyr Leu Ser Ser Ile Val Glu
245 250 255

cgc atc tcc acc gag agc cct gcg gcg ccc gcc ctc ctg ctg gcg gac 936
Arg Ile Ser Thr Glu Ser Pro Ala Ala Pro Ala Leu Leu Leu Ala Asp
260 265 270

gtg cct tct gag tcg cct ccg cgc agg caa gag gct gcc gcc ccc agc 984
Val Pro Ser Glu Ser Pro Pro Arg Arg Gln Glu Ala Ala Ala Pro Ser
275 280 285

gag gga gag agc agc ggc gac ccc acc cag tca ccg gac gcc gcc ccg 1032
Glu Gly Glu Ser Ser Gly Asp Pro Thr Gln Ser Pro Asp Ala Ala Pro
290 295 300

cag tgc cct gcg ggt gcg aac ccc aac ccg ata tac cag gtg ctc tga 1080
Gln Cys Pro Ala Gly Ala Asn Pro Asn Pro Ile Tyr Gln Val Leu
305 310 315

gggggatgtg gccgcccaac cccgccaggg atggtgccct agggtccctc gcgcccaaaa 1140

gattgaactt aaatgccccc ctcccaacag cgctttaaaa gcgccatctc ttgaggtagg 1200

agaggcggag aactgaagtt tccgcccccc ccgacagggc aaggacacag cgcggttttt 1260

tccacgcagc acccttctcg gagacccatt gcgatggccg ctccgtgttc ctcggtgggc 1320

cagagctgaa ccttgagggg ctaggttcac gtttctcgcg ccctccatgg tgagaccctc 1380

gcagacctaa ccctgccccg ggatgcaccg gttatttggg ggggcgtgag acagtgcact 1440

ccggtcccaa atgtagcagg tgtaaccgta acccaccccc aacccgtttc ccggttcagg 1500

accacttttt gtaatacttt ttgtaatcta ttcctgtaaa taagagttcg tttgccagag 1560

aggagcccct ggggctgtat ttatctctga ggcagggtgt gtggtgctac agggaatttg 1620

tacgtttata ccgcaggcgg gcgagccgcg ggcgctcgct caggtgatca aaataaaggc 1680

gctaatttat aa 1692

<210> 10
<211> 319
<212> PRT
<213> Homo sapiens

<400> 10

Met Glu Leu Leu Ser Pro Pro Leu Arg Asp Val Asp Leu Thr Ala Pro
1 5 10 15

Asp Gly Ser Leu Cys Ser Phe Ala Thr Thr Asp Asp Phe Tyr Asp Asp
20 25 30

Pro Cys Phe Asp Ser Pro Asp Leu Arg Phe Phe Glu Asp Leu Asp Pro
35 40 45

Arg Leu Met His Val Gly Ala Leu Leu Lys Pro Glu Glu His Ser His
50 55 60

Phe Pro Ala Ala Val His Pro Ala Pro Gly Ala Arg Glu Asp Glu His
65 70 75 80

Val Arg Ala Pro Ser Gly His His Gln Ala Gly Arg Cys Leu Leu Trp
85 90 95

Ala Cys Lys Ala Cys Lys Arg Lys Thr Thr Asn Ala Asp Arg Arg Lys
100 105 110

Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Ser Lys Val Asn Glu Ala
115 120 125

Phe Glu Thr Leu Lys Arg Cys Thr Ser Ser Asn Pro Asn Gln Arg Leu
130 135 140

Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu Gly Leu
145 150 155 160

Gln Ala Leu Leu Arg Asp Gln Asp Ala Ala Pro Pro Gly Ala Ala Ala
165 170 175

Phe Tyr Ala Pro Gly Pro Leu Pro Pro Gly Arg Gly Gly Glu His Tyr
180 185 190

Ser Gly Asp Ser Asp Ala Ser Ser Pro Arg Ser Asn Cys Ser Asp Gly
195 200 205

Met Met Asp Tyr Ser Gly Pro Pro Ser Gly Ala Arg Arg Arg Asn Cys
210 215 220

Tyr Glu Gly Ala Tyr Tyr Asn Glu Ala Pro Ser Glu Pro Arg Pro Gly
225 230 235 240

Lys Ser Ala Ala Val Ser Ser Leu Asp Tyr Leu Ser Ser Ile Val Glu
245 250 255

Arg Ile Ser Thr Glu Ser Pro Ala Ala Pro Ala Leu Leu Leu Ala Asp
260 265 270

Val Pro Ser Glu Ser Pro Pro Arg Arg Gln Glu Ala Ala Ala Pro Ser
275 280 285

Glu Gly Glu Ser Ser Gly Asp Pro Thr Gln Ser Pro Asp Ala Ala Pro
290 295 300

Gln Cys Pro Ala Gly Ala Asn Pro Asn Pro Ile Tyr Gln Val Leu
305 310 315

<210> 11
<211> 1427
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (43)..(810)

<400> 11
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Met Asp Val Met
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gat ggc tgc cag ttc tca cct tct gag tac ttc tac gac ggc tcc tgc      102
Asp Gly Cys Gln Phe Ser Pro Ser Glu Tyr Phe Tyr Asp Gly Ser Cys
5                   10                  15                  20

ata ccg tcc ccc gag ggt gaa ttt ggg gac gag ttt gtg ccg cga gtg      150
Ile Pro Ser Pro Glu Gly Glu Phe Gly Asp Glu Phe Val Pro Arg Val
                25                  30                  35

gct gcc ttc gga gcg cac aaa gca gag ctg cag ggc tca gat gag gac      198
Ala Ala Phe Gly Ala His Lys Ala Glu Leu Gln Gly Ser Asp Glu Asp
            40                  45                  50

gag cac gtg cga gcg cct acc ggc cac cac cag gct ggt cac tgc ctc      246
Glu His Val Arg Ala Pro Thr Gly His His Gln Ala Gly His Cys Leu
        55                  60                  65

atg tgg gcc tgc aaa gcc tgc aag agg aag tcc acc acc atg gat cgg      294
Met Trp Ala Cys Lys Ala Cys Lys Arg Lys Ser Thr Thr Met Asp Arg
    70                  75                  80

cgg aag gca gcc act atg cgc gag cgg agg cgc ctg aag aag gtc aac      342
Arg Lys Ala Ala Thr Met Arg Glu Arg Arg Arg Leu Lys Lys Val Asn
85                  90                  95                  100

cag gct ttc gaa acc ctc aag agg tgt acc acg acc aac ccc aac cag      390
Gln Ala Phe Glu Thr Leu Lys Arg Cys Thr Thr Thr Asn Pro Asn Gln
                105                 110                 115

agg ctg ccc aag gtg gag atc ctc agg aat gcc atc cgc tac atc gag      438
Arg Leu Pro Lys Val Glu Ile Leu Arg Asn Ala Ile Arg Tyr Ile Glu
            120                 125                 130

agc ctg cag gag ttg ctg aga gag cag gtg gag aac tac tat agc ctg      486
Ser Leu Gln Glu Leu Leu Arg Glu Gln Val Glu Asn Tyr Tyr Ser Leu
        135                 140                 145
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ccg gga cag agc tgc tcg gag ccc acc agc ccc acc tcc aac tgc tct      534
Pro Gly Gln Ser Cys Ser Glu Pro Thr Ser Pro Thr Ser Asn Cys Ser
    150                 155                 160

gat ggc atg ccc gaa tgt aac agt cct gtc tgg tcc aga aag agc agt      582
Asp Gly Met Pro Glu Cys Asn Ser Pro Val Trp Ser Arg Lys Ser Ser
165                 170                 175                 180

act ttt gac agc atc tac tgt cct gat gta tca aat gta tat gcc aca      630
Thr Phe Asp Ser Ile Tyr Cys Pro Asp Val Ser Asn Val Tyr Ala Thr
                185                 190                 195

gat aaa aac tcc tta tcc agc ttg gat tgc tta tcc aac ata gtg gac      678
Asp Lys Asn Ser Leu Ser Ser Leu Asp Cys Leu Ser Asn Ile Val Asp
            200                 205                 210

cgg atc acc tcc tca gag caa cct ggg ttg cct ctc cag gat ctg gct      726
Arg Ile Thr Ser Ser Glu Gln Pro Gly Leu Pro Leu Gln Asp Leu Ala
        215                 220                 225

tct ctc tct cca gtt gcc agc acc gat tca cag cct cga act cca ggg      774
Ser Leu Ser Pro Val Ala Ser Thr Asp Ser Gln Pro Arg Thr Pro Gly
    230                 235                 240

gct tct agt tcc agg ctt atc tat cat gtg cta tga actaattttc           820
Ala Ser Ser Ser Arg Leu Ile Tyr His Val Leu
245                 250                 255

tggtctatat gacttcttcc aggagggcct aatacacagg acgaagaagg cttcaaaaag    880

tcccaaacca agacaacatg tacataaaga tttcttttca gttgtaaatt tgtaaagatt    940

accttgccac tttataagaa agtgtattta actaaaaagt catcattgca aataatactt   1000

tcttcttctt tattattctt tgcttagata ttaatacata gttccagtaa tactatttct   1060
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gataggggc cattgattga gggtagcttg ttcgaatgct taacttatat atacatatat 1120

atatattata aatattgctc atcaaaatgt ctctggtgtt tagagcttta ttttttttctt 1180

taaaacatta aaacagctga gaatcagtta aatggaattt taaatatatt taactatttc 1240

ttttctcttt aatcctttag ttatattgta ttaaataaaa atataatact gcctaatgta 1300

tatattttga tcttttcttg taagaaatgt atcttttaaa tgtaagcaca aaatagtact 1360

ttgtggatca tttcaagata taagaaattt tggaaattcc accataaata aaatttttta 1420

ctacaag 1427

<210> 12
<211> 255
<212> PRT
<213> Homo sapiens

<400> 12

Met Asp Val Met Asp Gly Cys Gln Phe Ser Pro Ser Glu Tyr Phe Tyr
1 5 10 15

Asp Gly Ser Cys Ile Pro Ser Pro Glu Gly Glu Phe Gly Asp Glu Phe
20 25 30

Val Pro Arg Val Ala Ala Phe Gly Ala His Lys Ala Glu Leu Gln Gly
35 40 45

Ser Asp Glu Asp Glu His Val Arg Ala Pro Thr Gly His His Gln Ala

50 55 60

Gly His Cys Leu Met Trp Ala Cys Lys Ala Cys Lys Arg Lys Ser Thr
65 70 75 80

Thr Met Asp Arg Arg Lys Ala Ala Thr Met Arg Glu Arg Arg Arg Leu
85 90 95

Lys Lys Val Asn Gln Ala Phe Glu Thr Leu Lys Arg Cys Thr Thr Thr
100 105 110

Asn Pro Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Asn Ala Ile
115 120 125

Arg Tyr Ile Glu Ser Leu Gln Glu Leu Leu Arg Glu Gln Val Glu Asn
130 135 140

Tyr Tyr Ser Leu Pro Gly Gln Ser Cys Ser Glu Pro Thr Ser Pro Thr
145 150 155 160

Ser Asn Cys Ser Asp Gly Met Pro Glu Cys Asn Ser Pro Val Trp Ser
165 170 175

Arg Lys Ser Ser Thr Phe Asp Ser Ile Tyr Cys Pro Asp Val Ser Asn
180 185 190

Val Tyr Ala Thr Asp Lys Asn Ser Leu Ser Ser Leu Asp Cys Leu Ser

195 200 205

Asn Ile Val Asp Arg Ile Thr Ser Ser Glu Gln Pro Gly Leu Pro Leu
210 215 220

Gln Asp Leu Ala Ser Leu Ser Pro Val Ala Ser Thr Asp Ser Gln Pro
225 230 235 240

Arg Thr Pro Gly Ala Ser Ser Ser Arg Leu Ile Tyr His Val Leu
245 250 255

<210> 13
<211> 675
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(675)

<400> 13
atg gag ctg tat gag aca tcc ccc tac ttc tac cag gaa ccc cgc ttc 48
Met Glu Leu Tyr Glu Thr Ser Pro Tyr Phe Tyr Gln Glu Pro Arg Phe
1 5 10 15

tat gat ggg gaa aac tac ctg cct gtc cac ctc cag ggc ttc gaa cca 96
Tyr Asp Gly Glu Asn Tyr Leu Pro Val His Leu Gln Gly Phe Glu Pro
20 25 30

cca ggc tac gag cgg acg gag ctc acc ctg agc ccc gag gcc cca ggg 144
Pro Gly Tyr Glu Arg Thr Glu Leu Thr Leu Ser Pro Glu Ala Pro Gly

35 40 45

ccc ctt gag gac aag ggg ctg ggg acc ccc gag cac tgt cca ggc cag 192
Pro Leu Glu Asp Lys Gly Leu Gly Thr Pro Glu His Cys Pro Gly Gln
50 55 60

tgc ctg ccg tgg gcg tgt aag gtg tgt aag agg aag tcg gtg tcc gtg 240
Cys Leu Pro Trp Ala Cys Lys Val Cys Lys Arg Lys Ser Val Ser Val
65 70 75 80

gac cgg cgg cgg gcg gcc aca ctg agg gag aag cgc agg ctc aag aag 288
Asp Arg Arg Arg Ala Ala Thr Leu Arg Glu Lys Arg Arg Leu Lys Lys
85 90 95

gtg aat gag gcc ttc gag gcc ctg aag aga agc acc ctg ctc aac ccc 336
Val Asn Glu Ala Phe Glu Ala Leu Lys Arg Ser Thr Leu Leu Asn Pro
100 105 110

aac cag cgg ctg ccc aag gtg gag atc ctg cgc agt gcc atc cag tac 384
Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Ser Ala Ile Gln Tyr
115 120 125

atc gag cgc ctc cag gcc ctg ctc agc tcc ctc aac cag gag gag cgt 432
Ile Glu Arg Leu Gln Ala Leu Leu Ser Ser Leu Asn Gln Glu Glu Arg
130 135 140

gac ctc cgc tac cgg ggc ggg ggc ggg ccc cag cca ggg gtg ccc agc 480
Asp Leu Arg Tyr Arg Gly Gly Gly Gly Pro Gln Pro Gly Val Pro Ser
145 150 155 160

gaa tgc agc tct cac agc gcc tcc tgc agt cca gag tgg ggc agt gca 528
Glu Cys Ser Ser His Ser Ala Ser Cys Ser Pro Glu Trp Gly Ser Ala
165 170 175

ctg gag ttc agc gcc aac cca ggg gat cat ctg ctc acg gct gac cct 576
Leu Glu Phe Ser Ala Asn Pro Gly Asp His Leu Leu Thr Ala Asp Pro

180 185 190

aca gat gcc cac aac ctg cac tcc ctc acc tcc atc gtg gac agc atc 624
Thr Asp Ala His Asn Leu His Ser Leu Thr Ser Ile Val Asp Ser Ile
195 200 205

aca gtg gaa gat gtg tct gtg gcc ttc cca gat gaa acc atg ccc aac 672
Thr Val Glu Asp Val Ser Val Ala Phe Pro Asp Glu Thr Met Pro Asn
210 215 220

tag 675

<210> 14
<211> 224
<212> PRT
<213> Homo sapiens

<400> 14

Met Glu Leu Tyr Glu Thr Ser Pro Tyr Phe Tyr Gln Glu Pro Arg Phe
1 5 10 15

Tyr Asp Gly Glu Asn Tyr Leu Pro Val His Leu Gln Gly Phe Glu Pro
20 25 30

Pro Gly Tyr Glu Arg Thr Glu Leu Thr Leu Ser Pro Glu Ala Pro Gly
35 40 45

Pro Leu Glu Asp Lys Gly Leu Gly Thr Pro Glu His Cys Pro Gly Gln
50 55 60

Cys Leu Pro Trp Ala Cys Lys Val Cys Lys Arg Lys Ser Val Ser Val
65 70 75 80

Asp Arg Arg Arg Ala Ala Thr Leu Arg Glu Lys Arg Arg Leu Lys Lys
85 90 95

Val Asn Glu Ala Phe Glu Ala Leu Lys Arg Ser Thr Leu Leu Asn Pro
100 105 110

Asn Gln Arg Leu Pro Lys Val Glu Ile Leu Arg Ser Ala Ile Gln Tyr
115 120 125

Ile Glu Arg Leu Gln Ala Leu Leu Ser Ser Leu Asn Gln Glu Glu Arg
130 135 140

Asp Leu Arg Tyr Arg Gly Gly Gly Gly Pro Gln Pro Gly Val Pro Ser
145 150 155 160

Glu Cys Ser Ser His Ser Ala Ser Cys Ser Pro Glu Trp Gly Ser Ala
165 170 175

Leu Glu Phe Ser Ala Asn Pro Gly Asp His Leu Leu Thr Ala Asp Pro
180 185 190

Thr Asp Ala His Asn Leu His Ser Leu Thr Ser Ile Val Asp Ser Ile
195 200 205

Thr Val Glu Asp Val Ser Val Ala Phe Pro Asp Glu Thr Met Pro Asn
210 215 220

<210> 15
<211> 3935
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (373)..(1902)

<400> 15
ggagagccga aagcggagct cgaaactgac tggaaacttc agtggcgcgg agactcgcca 60

gtttcaaccc cggaaacttt tctttgcagg aggagaagag aaggggtgca agcgccccca 120

cttttgctct ttttcctccc ctcctcctcc tctccaattc gcctcccccc acttggagcg 180

ggcagctgtg aactggccac cccgcgcctt cctaagtgct cgccgcggta gccggccgac 240

gcgccagctt ccccgggagc cgcttgctcc gcatccgggc agccgagggg agaggagccc 300

gcgcctcgag tccccgagcc gccgcggctt ctcgcctttc ccggccacca gcccccctgcc 360

ccgggcccgc gt atg aat ctc ctg gac ccc ttc atg aag atg acc gac gag 411
Met Asn Leu Leu Asp Pro Phe Met Lys Met Thr Asp Glu
1 5 10

cag gag aag ggc ctg tcc ggc gcc ccc agc ccc acc atg tcc gag gac 459
Gln Glu Lys Gly Leu Ser Gly Ala Pro Ser Pro Thr Met Ser Glu Asp
15 20 25

tcc gcg ggc tcg ccc tgc ccg tcg ggc tcc ggc tcg gac acc gag aac 507

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Ser Ala Gly Ser Pro Cys Pro Ser Gly Ser Gly Ser Asp Thr Glu Asn
30                  35                  40                  45

acg cgg ccc cag gag aac acg ttc ccc aag ggc gag ccc gat ctg aag      555
Thr Arg Pro Gln Glu Asn Thr Phe Pro Lys Gly Glu Pro Asp Leu Lys
                50                  55                  60

aag gag agc gag gag gac aag ttc ccc gtg tgc atc cgc gag gcg gtc      603
Lys Glu Ser Glu Glu Asp Lys Phe Pro Val Cys Ile Arg Glu Ala Val
            65                  70                  75

agc cag gtg ctc aaa ggc tac gac tgg acg ctg gtg ccc atg ccg gtg      651
Ser Gln Val Leu Lys Gly Tyr Asp Trp Thr Leu Val Pro Met Pro Val
        80                  85                  90

cgc gtc aac ggc tcc agc aag aac aag ccg cac gtc aag cgg ccc atg      699
Arg Val Asn Gly Ser Ser Lys Asn Lys Pro His Val Lys Arg Pro Met
    95                  100                 105

aac gcc ttc atg gtg tgg gcg cag gcg gcg cgc agg aag ctc gcg gac      747
Asn Ala Phe Met Val Trp Ala Gln Ala Ala Arg Arg Lys Leu Ala Asp
110                 115                 120                 125

cag tac ccg cac ttg cac aac gcc gag ctc agc aag acg ctg ggc aag      795
Gln Tyr Pro His Leu His Asn Ala Glu Leu Ser Lys Thr Leu Gly Lys
                130                 135                 140

ctc tgg aga ctt ctg aac gag agc gag aag cgg ccc ttc gtg gag gag      843
Leu Trp Arg Leu Leu Asn Glu Ser Glu Lys Arg Pro Phe Val Glu Glu
            145                 150                 155

gcg gag cgg ctg cgc gtg cag cac aag aag gac cac ccg gat tac aag      891
Ala Glu Arg Leu Arg Val Gln His Lys Lys Asp His Pro Asp Tyr Lys
        160                 165                 170

tac cag ccg cgg cgg agg aag tcg gtg aag aac ggg cag gcg gag gca      939
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Tyr Gln Pro Arg Arg Arg Lys Ser Val Lys Asn Gly Gln Ala Glu Ala
    175                 180                 185

gag gag gcc acg gag cag acg cac atc tcc ccc aac gcc atc ttc aag      987
Glu Glu Ala Thr Glu Gln Thr His Ile Ser Pro Asn Ala Ile Phe Lys
190                 195                 200                 205

gcg ctg cag gcc gac tcg cca cac tcc tcc tcc ggc atg agc gag gtg     1035
Ala Leu Gln Ala Asp Ser Pro His Ser Ser Ser Gly Met Ser Glu Val
                210                 215                 220

cac tcc ccc ggc gag cac tcg ggg caa tcc cag ggc cca ccg acc cca     1083
His Ser Pro Gly Glu His Ser Gly Gln Ser Gln Gly Pro Pro Thr Pro
            225                 230                 235

ccc acc acc ccc aaa acc gac gtg cag ccg ggc aag gct gac ctg aag     1131
Pro Thr Thr Pro Lys Thr Asp Val Gln Pro Gly Lys Ala Asp Leu Lys
        240                 245                 250

cga gag ggg cgc ccc ttg cca gag ggg ggc aga cag ccc cct atc gac     1179
Arg Glu Gly Arg Pro Leu Pro Glu Gly Gly Arg Gln Pro Pro Ile Asp
    255                 260                 265

ttc cgc gac gtg gac atc ggc gag ctg agc agc gac gtc atc tcc aac     1227
Phe Arg Asp Val Asp Ile Gly Glu Leu Ser Ser Asp Val Ile Ser Asn
270                 275                 280                 285

atc gag acc ttc gat gtc aac gag ttt gac cag tac ctg ccg ccc aac     1275
Ile Glu Thr Phe Asp Val Asn Glu Phe Asp Gln Tyr Leu Pro Pro Asn
                290                 295                 300

ggc cac ccg ggg gtg ccg gcc acg cac ggc cag gtc acc tac acg ggc     1323
Gly His Pro Gly Val Pro Ala Thr His Gly Gln Val Thr Tyr Thr Gly
            305                 310                 315

agc tac ggc atc agc agc acc gcg gcc acc ccg gcg agc gcg ggc cac     1371
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Ser Tyr Gly Ile Ser Ser Thr Ala Ala Thr Pro Ala Ser Ala Gly His
        320                 325                 330

gtg tgg atg tcc aag cag cag gcg ccg ccg cca ccc ccg cag cag ccc    1419
Val Trp Met Ser Lys Gln Gln Ala Pro Pro Pro Pro Pro Gln Gln Pro
    335                 340                 345

cca cag gcc ccg ccg gcc ccg cag gcg ccc ccg cag ccg cag gcg gcg    1467
Pro Gln Ala Pro Pro Ala Pro Gln Ala Pro Pro Gln Pro Gln Ala Ala
350                 355                 360                 365

ccc cca cag cag ccg gcg gca ccc ccg cag cag cca cag gcg cac acg    1515
Pro Pro Gln Gln Pro Ala Ala Pro Pro Gln Gln Pro Gln Ala His Thr
                370                 375                 380

ctg acc acg ctg agc agc gag ccg ggc cag tcc cag cga acg cac atc    1563
Leu Thr Thr Leu Ser Ser Glu Pro Gly Gln Ser Gln Arg Thr His Ile
            385                 390                 395

aag acg gag cag ctg agc ccc agc cac tac agc gag cag cag cag cac    1611
Lys Thr Glu Gln Leu Ser Pro Ser His Tyr Ser Glu Gln Gln Gln His
        400                 405                 410

tcg ccc caa cag atc gcc tac agc ccc ttc aac ctc cca cac tac agc    1659
Ser Pro Gln Gln Ile Ala Tyr Ser Pro Phe Asn Leu Pro His Tyr Ser
    415                 420                 425

ccc tcc tac ccg ccc atc acc cgc tca cag tac gac tac acc gac cac    1707
Pro Ser Tyr Pro Pro Ile Thr Arg Ser Gln Tyr Asp Tyr Thr Asp His
430                 435                 440                 445

cag aac tcc agc tcc tac tac agc cac gcg gca ggc cag ggc acc ggc    1755
Gln Asn Ser Ser Ser Tyr Tyr Ser His Ala Ala Gly Gln Gly Thr Gly
                450                 455                 460

ctc tac tcc acc ttc acc tac atg aac ccc gct cag cgc ccc atg tac    1803
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Leu Tyr Ser Thr Phe Thr Tyr Met Asn Pro Ala Gln Arg Pro Met Tyr
465 470 475

acc ccc atc gcc gac acc tct ggg gtc cct tcc atc ccg cag acc cac 1851
Thr Pro Ile Ala Asp Thr Ser Gly Val Pro Ser Ile Pro Gln Thr His
480 485 490

agc ccc cag cac tgg gaa caa ccc gtc tac aca cag ctc act cga cct 1899
Ser Pro Gln His Trp Glu Gln Pro Val Tyr Thr Gln Leu Thr Arg Pro
495 500 505

tga ggaggcctcc cacgaagggc gaagatggcc gagatgatcc taaaaataac 1952

cgaagaaaga gaggaccaac cagaattccc tttggacatt tgtgtttttt tgtttttta 2012

ttttgttttg ttttttcttc ttcttcttct tccttaaaga catttaagct aaaggcaact 2072

cgtacccaaa tttccaagac acaaacatga cctatccaag cgcattaccc acttgtggcc 2132

aatcagtggc caggccaacc ttggctaaat ggagcagcga aatcaacgag aaactggact 2192

ttttaaaccc tcttcagagc aagcgtggag gatgatggag aatcgtgtga tcagtgtgct 2252

aaatctctct gcctgtttgg actttgtaat tatttttta gcagtaatta aagaaaaaag 2312

tcctctgtga ggaatattct ctattttaaa tatttttagt atgtactgtg tatgattcat 2372

taccattttg aggggattta tacatatttt tagataaaat taaatgctct tatttttcca 2432

acagctaaac tactcttagt tgaacagtgt gccctagctt ttcttgcaac cagagtattt 2492

ttgtacagat ttgctttctc ttacaaaaag aaaaaaaaaa tcctgttgta ttaacattta 2552

aaaacagaat tgtgttatgt gatcagtttt gggggttaac tttgcttaat tcctcaggct 2612

ttgcgattta aggaggagct gccttaaaaa aaaataaagg ccttattttg caattatggg 2672

agtaaacaat agtctagaga agcatttggt aagctttatc atatatatat tttttaaaga 2732

agagaaaaac accttgagcc ttaaaacggt gctgctggga aacatttgca ctcttttagt 2792

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aaggagatga aatctgttct gggaatgttt cagcagccaa taagtgcccg agcacactgc 2912

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Gln Glu Asn Thr Phe Pro Lys Gly Glu Pro Asp Leu Lys Lys Glu Ser
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Glu Glu Asp Lys Phe Pro Val Cys Ile Arg Glu Ala Val Ser Gln Val
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Leu Lys Gly Tyr Asp Trp Thr Leu Val Pro Met Pro Val Arg Val Asn
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Gly Ser Ser Lys Asn Lys Pro His Val Lys Arg Pro Met Asn Ala Phe
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Met Val Trp Ala Gln Ala Ala Arg Arg Lys Leu Ala Asp Gln Tyr Pro
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His Leu His Asn Ala Glu Leu Ser Lys Thr Leu Gly Lys Leu Trp Arg
130 135 140

Leu Leu Asn Glu Ser Glu Lys Arg Pro Phe Val Glu Glu Ala Glu Arg
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Leu Arg Val Gln His Lys Lys Asp His Pro Asp Tyr Lys Tyr Gln Pro
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Arg Arg Arg Lys Ser Val Lys Asn Gly Gln Ala Glu Ala Glu Glu Ala
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Thr Glu Gln Thr His Ile Ser Pro Asn Ala Ile Phe Lys Ala Leu Gln
195 200 205

Ala Asp Ser Pro His Ser Ser Ser Gly Met Ser Glu Val His Ser Pro
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Gly Glu His Ser Gly Gln Ser Gln Gly Pro Pro Thr Pro Pro Thr Thr
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Pro Lys Thr Asp Val Gln Pro Gly Lys Ala Asp Leu Lys Arg Glu Gly
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Arg Pro Leu Pro Glu Gly Gly Arg Gln Pro Pro Ile Asp Phe Arg Asp
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Val Asp Ile Gly Glu Leu Ser Ser Asp Val Ile Ser Asn Ile Glu Thr
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Gly Val Pro Ala Thr His Gly Gln Val Thr Tyr Thr Gly Ser Tyr Gly
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Ile Ser Ser Thr Ala Ala Thr Pro Ala Ser Ala Gly His Val Trp Met
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Gln Ile Ala Tyr Ser Pro Phe Asn Leu Pro His Tyr Ser Pro Ser Tyr
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Pro Pro Ile Thr Arg Ser Gln Tyr Asp Tyr Thr Asp His Gln Asn Ser
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Thr Phe Thr Tyr Met Asn Pro Ala Gln Arg Pro Met Tyr Thr Pro Ile
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Met Ile Arg Leu Gly Ala
1 5

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Pro Gln Ser Leu Val Leu Leu Thr Leu Leu Val Ala Ala Val Leu Arg
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Cys Gln Gly Gln Asp Val Gln Glu Ala Gly Ser Cys Val Gln Asp Gly
25 30 35

cag agg tat aat gat aag gat gtg tgg aag ccg gag ccc tgc cgg atc 319
Gln Arg Tyr Asn Asp Lys Asp Val Trp Lys Pro Glu Pro Cys Arg Ile
40 45 50

tgt gtc tgt gac act ggg act gtc ctc tgc gac gac ata atc tgt gaa 367
Cys Val Cys Asp Thr Gly Thr Val Leu Cys Asp Asp Ile Ile Cys Glu
55 60 65 70

gac gtg aaa gac tgc ctc agc cct gag atc ccc ttc gga gag tgc tgc 415
Asp Val Lys Asp Cys Leu Ser Pro Glu Ile Pro Phe Gly Glu Cys Cys
75 80 85

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Pro Ile Cys Pro Thr Asp Leu Ala Thr Ala Ser Gly Gln Pro Gly Pro
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Lys Gly Gln Lys Gly Glu Pro Gly Asp Ile Lys Asp Ile Val Gly Pro
105 110 115

aaa gga cct cct ggg cct cag gga cct gca ggg gaa caa gga ccc aga 559
Lys Gly Pro Pro Gly Pro Gln Gly Pro Ala Gly Glu Gln Gly Pro Arg
120 125 130

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Gly Asp Arg Gly Asp Lys Gly Glu Lys Gly Ala Pro Gly Pro Arg Gly
135 140 145 150

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Arg Asp Gly Glu Pro Gly Thr Pro Gly Asn Pro Gly Pro Pro Gly Pro
155 160 165

ccc ggc ccc cct ggt ccc cct ggt ctt ggt gga aac ttt gct gcc cag 703
Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly Gly Asn Phe Ala Ala Gln
170 175 180

atg gct gga gga ttt gat gaa aag gct ggt ggc gcc cag ttg gga gta 751
Met Ala Gly Gly Phe Asp Glu Lys Ala Gly Gly Ala Gln Leu Gly Val
185 190 195

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Met Gln Gly Pro Met Gly Pro Met Gly Pro Arg Gly Pro Pro Gly Pro
200 205 210

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Ala Gly Ala Pro Gly Pro Gln Gly Phe Gln Gly Asn Pro Gly Glu Pro
215                 220                 225                 230

ggt gaa cct ggt gtc tct ggt ccc atg ggt ccc cgt ggt cct cct ggt      895
Gly Glu Pro Gly Val Ser Gly Pro Met Gly Pro Arg Gly Pro Pro Gly
                235                 240                 245

ccc cct gga aag cct ggt gat gat ggt gaa gct gga aaa cct gga aaa      943
Pro Pro Gly Lys Pro Gly Asp Asp Gly Glu Ala Gly Lys Pro Gly Lys
            250                 255                 260

gct ggt gaa agg ggt ccg cct ggt cct cag ggt gct cgt ggt ttc cca      991
Ala Gly Glu Arg Gly Pro Pro Gly Pro Gln Gly Ala Arg Gly Phe Pro
        265                 270                 275

gga acc cca ggc ctt cct ggt gtc aaa ggt cac aga ggt tat cca ggc     1039
Gly Thr Pro Gly Leu Pro Gly Val Lys Gly His Arg Gly Tyr Pro Gly
    280                 285                 290

ctg gac ggt gct aag gga gag gcg ggt gct cct ggt gtg aag ggt gag     1087
Leu Asp Gly Ala Lys Gly Glu Ala Gly Ala Pro Gly Val Lys Gly Glu
295                 300                 305                 310

agt ggt tcc ccg ggt gag aac gga tct ccg ggc cca atg ggt cct cgt     1135
Ser Gly Ser Pro Gly Glu Asn Gly Ser Pro Gly Pro Met Gly Pro Arg
                315                 320                 325

ggc ctg cct ggt gaa aga gga cgg act ggc cct gct ggc gct gcg ggt     1183
Gly Leu Pro Gly Glu Arg Gly Arg Thr Gly Pro Ala Gly Ala Ala Gly
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gcc cga ggc aac gat ggt cag cca ggc ccc gca ggt cct ccg ggt cct     1231
Ala Arg Gly Asn Asp Gly Gln Pro Gly Pro Ala Gly Pro Pro Gly Pro
        345                 350                 355
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gtc ggt cct gct ggt ggt cct ggc ttc cct ggt gct cct gga gcc aag     1279
Val Gly Pro Ala Gly Gly Pro Gly Phe Pro Gly Ala Pro Gly Ala Lys
    360                 365                 370

ggt gaa gcc ggc ccc act ggt gcc cgt ggt cct gaa ggt gct caa ggt     1327
Gly Glu Ala Gly Pro Thr Gly Ala Arg Gly Pro Glu Gly Ala Gln Gly
375                 380                 385                 390

cct cgc ggt gaa cct ggt act cct ggg tcc cct ggg cct gct ggt gcc     1375
Pro Arg Gly Glu Pro Gly Thr Pro Gly Ser Pro Gly Pro Ala Gly Ala
                395                 400                 405

tcc ggt aac cct gga aca gat gga att cct gga gcc aaa gga tct gct     1423
Ser Gly Asn Pro Gly Thr Asp Gly Ile Pro Gly Ala Lys Gly Ser Ala
            410                 415                 420

ggt gct cct ggc att gct ggt gct cct ggc ttc cct ggg cca cgg ggt     1471
Gly Ala Pro Gly Ile Ala Gly Ala Pro Gly Phe Pro Gly Pro Arg Gly
        425                 430                 435

cct cct ggc cct caa ggt gca act ggt cct ctg ggc ccg aaa ggt cag     1519
Pro Pro Gly Pro Gln Gly Ala Thr Gly Pro Leu Gly Pro Lys Gly Gln
    440                 445                 450

acg ggt gaa cct ggt att gct ggc ttc aaa ggt gaa caa ggc ccc aag     1567
Thr Gly Glu Pro Gly Ile Ala Gly Phe Lys Gly Glu Gln Gly Pro Lys
455                 460                 465                 470

gga gaa cct ggc cct gct ggc ccc cag gga gcc cct gga ccc gct ggt     1615
Gly Glu Pro Gly Pro Ala Gly Pro Gln Gly Ala Pro Gly Pro Ala Gly
                475                 480                 485

gaa gaa ggc aag aga ggt gcc cgt gga gag cct ggt ggc gtt ggg ccc     1663
Glu Glu Gly Lys Arg Gly Ala Arg Gly Glu Pro Gly Gly Val Gly Pro
            490                 495                 500
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atc ggt ccc cct gga gaa aga ggt gct ccc gga aac cgc ggt ttc cca     1711
Ile Gly Pro Pro Gly Glu Arg Gly Ala Pro Gly Asn Arg Gly Phe Pro
        505                 510                 515

ggt caa gat ggt ctg gca ggt ccc aag gga gcc cct gga gag cga ggg     1759
Gly Gln Asp Gly Leu Ala Gly Pro Lys Gly Ala Pro Gly Glu Arg Gly
    520                 525                 530

ccc agt ggt ctt gct ggc ccc aag gga gcc aac ggt gac cct ggc cgt     1807
Pro Ser Gly Leu Ala Gly Pro Lys Gly Ala Asn Gly Asp Pro Gly Arg
535                 540                 545                 550

cct gga gaa cct ggc ctt cct gga gcc cgg ggt ctc act ggc cgc cct     1855
Pro Gly Glu Pro Gly Leu Pro Gly Ala Arg Gly Leu Thr Gly Arg Pro
                555                 560                 565

ggt gat gct ggt cct caa ggc aaa gtt ggc cct tct gga gcc cct ggt     1903
Gly Asp Ala Gly Pro Gln Gly Lys Val Gly Pro Ser Gly Ala Pro Gly
            570                 575                 580

gaa gat ggt cgt cct gga cct cca ggt cct cag ggg gct cgt ggg cag     1951
Glu Asp Gly Arg Pro Gly Pro Pro Gly Pro Gln Gly Ala Arg Gly Gln
        585                 590                 595

cct ggt gtc atg ggt ttc cct ggc ccc aaa ggt gcc aac ggt gag cct     1999
Pro Gly Val Met Gly Phe Pro Gly Pro Lys Gly Ala Asn Gly Glu Pro
    600                 605                 610

ggc aaa gct ggt gag aag gga ctg cct ggt gct cct ggt ctg agg ggt     2047
Gly Lys Ala Gly Glu Lys Gly Leu Pro Gly Ala Pro Gly Leu Arg Gly
615                 620                 625                 630

ctt cct ggc aaa gat ggt gag aca ggt gct gca gga ccc cct ggc cct     2095
Leu Pro Gly Lys Asp Gly Glu Thr Gly Ala Ala Gly Pro Pro Gly Pro
                635                 640                 645
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gct gga cct gct ggt gaa cga ggc gag cag ggt gct cct ggg cca tct     2143
Ala Gly Pro Ala Gly Glu Arg Gly Glu Gln Gly Ala Pro Gly Pro Ser
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ggg ttc cag gga ctt cct ggc cct cct ggt ccc cca ggt gaa ggt gga     2191
Gly Phe Gln Gly Leu Pro Gly Pro Pro Gly Pro Pro Gly Glu Gly Gly
        665                 670                 675

aaa cca ggt gac cag ggt gtt ccc ggt gaa gct gga gcc cct ggc ctc     2239
Lys Pro Gly Asp Gln Gly Val Pro Gly Glu Ala Gly Ala Pro Gly Leu
    680                 685                 690

gtg ggt ccc agg ggt gaa cga ggt ttc cca ggt gaa cgt ggc tct ccc     2287
Val Gly Pro Arg Gly Glu Arg Gly Phe Pro Gly Glu Arg Gly Ser Pro
695                 700                 705                 710

ggt gcc cag ggc ctc cag ggt ccc cgt ggc ctc ccc ggc act cct ggc     2335
Gly Ala Gln Gly Leu Gln Gly Pro Arg Gly Leu Pro Gly Thr Pro Gly
                715                 720                 725

act gat ggt ccc aaa ggt gca tct ggc cca gca ggc ccc cct ggc gca     2383
Thr Asp Gly Pro Lys Gly Ala Ser Gly Pro Ala Gly Pro Pro Gly Ala
            730                 735                 740

cag ggc cct cca ggt ctt cag gga atg cct ggc gag agg gga gca gct     2431
Gln Gly Pro Pro Gly Leu Gln Gly Met Pro Gly Glu Arg Gly Ala Ala
        745                 750                 755

ggt atc gct ggg ccc aaa ggc gac agg ggt gac gtt ggt gag aaa ggc     2479
Gly Ile Ala Gly Pro Lys Gly Asp Arg Gly Asp Val Gly Glu Lys Gly
    760                 765                 770

cct gag gga gcc cct gga aag gat ggt gga cga ggc ctg aca ggt ccc     2527
Pro Glu Gly Ala Pro Gly Lys Asp Gly Gly Arg Gly Leu Thr Gly Pro
775                 780                 785                 790
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att ggc ccc cct ggc cca gct ggt gct aac ggc gag aag gga gaa gtt     2575
Ile Gly Pro Pro Gly Pro Ala Gly Ala Asn Gly Glu Lys Gly Glu Val
                795                 800                 805

gga cct cct ggt cct gca gga agt gct ggt gct cgt ggc gct ccg ggt     2623
Gly Pro Pro Gly Pro Ala Gly Ser Ala Gly Ala Arg Gly Ala Pro Gly
            810                 815                 820

gaa cgt gga gag act ggc ccc ccc gga cca gcg gga ttt gct ggg cct     2671
Glu Arg Gly Glu Thr Gly Pro Pro Gly Pro Ala Gly Phe Ala Gly Pro
        825                 830                 835

cct ggt gct gat ggc cag cct ggg gcc aag ggt gag caa gga gag gcc     2719
Pro Gly Ala Asp Gly Gln Pro Gly Ala Lys Gly Glu Gln Gly Glu Ala
    840                 845                 850

ggc cag aaa ggc gat gct ggt gcc cct ggt cct cag ggc ccc tct gga     2767
Gly Gln Lys Gly Asp Ala Gly Ala Pro Gly Pro Gln Gly Pro Ser Gly
855                 860                 865                 870

gca cct ggg cct cag ggt cct act gga gtg act ggt cct aaa gga gcc     2815
Ala Pro Gly Pro Gln Gly Pro Thr Gly Val Thr Gly Pro Lys Gly Ala
                875                 880                 885

cga ggt gcc caa ggc ccc ccg gga gcc act gga ttc cct gga gct gct     2863
Arg Gly Ala Gln Gly Pro Pro Gly Ala Thr Gly Phe Pro Gly Ala Ala
            890                 895                 900

ggc cgc gtt gga ccc cca ggc tcc aat ggc aac cct gga ccc cct ggt     2911
Gly Arg Val Gly Pro Pro Gly Ser Asn Gly Asn Pro Gly Pro Pro Gly
        905                 910                 915

ccc cct ggt cct tct gga aaa gat ggt ccc aaa ggt gct cga gga gac     2959
Pro Pro Gly Pro Ser Gly Lys Asp Gly Pro Lys Gly Ala Arg Gly Asp
    920                 925                 930
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agc ggc ccc cct ggc cga gct ggt gaa ccc ggc ctc caa ggt cct gct     3007
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935                 940                 945                 950

gga ccc cct ggc gag aag gga gag cct gga gat gac ggt ccc tct ggt     3055
Gly Pro Pro Gly Glu Lys Gly Glu Pro Gly Asp Asp Gly Pro Ser Gly
                955                 960                 965

gcc gaa ggt cca cca ggt ccc cag ggt ctg gct ggt cag aga ggc atc     3103
Ala Glu Gly Pro Pro Gly Pro Gln Gly Leu Ala Gly Gln Arg Gly Ile
            970                 975                 980

gtc ggt ctg cct ggg caa cgt ggt gag aga gga ttc cct ggc ttg cct     3151
Val Gly Leu Pro Gly Gln Arg Gly Glu Arg Gly Phe Pro Gly Leu Pro
        985                 990                 995

ggc cca  tcg ggt gag ccc ggc  aag cag ggt gct cct  gga gca tct     3196
Gly Pro  Ser Gly Glu Pro Gly  Lys Gln Gly Ala Pro  Gly Ala Ser
    1000                1005                1010

gga gac  aga ggt cct cct ggc  ccc gtg ggt cct cct  ggc ctg acg     3241
Gly Asp  Arg Gly Pro Pro Gly  Pro Val Gly Pro Pro  Gly Leu Thr
    1015                1020                1025

ggt cct  gca ggt gaa ccc gga  cga gag gga agc ccc  ggt gct gat     3286
Gly Pro  Ala Gly Glu Pro Gly  Arg Glu Gly Ser Pro  Gly Ala Asp
    1030                1035                1040

ggc ccc  cct ggc aga gat ggc  gct gct gga gtc aag  ggt gat cgt     3331
Gly Pro  Pro Gly Arg Asp Gly  Ala Ala Gly Val Lys  Gly Asp Arg
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ggt gag  act ggt gct gtg gga  gct cct gga gcc cct  ggg ccc cct     3376
Gly Glu  Thr Gly Ala Val Gly  Ala Pro Gly Ala Pro  Gly Pro Pro
    1060                1065                1070
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Gly Ser  Pro Gly Pro Ala Gly  Pro Thr Gly Lys Gln  Gly Asp Arg
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gga gaa  gct ggt gca caa ggc  ccc atg gga ccc tca  gga cca gct      3466
Gly Glu  Ala Gly Ala Gln Gly  Pro Met Gly Pro Ser  Gly Pro Ala
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gga gcc  cgg gga atc cag ggt  cct caa ggc ccc aga  ggt gac aaa      3511
Gly Ala  Arg Gly Ile Gln Gly  Pro Gln Gly Pro Arg  Gly Asp Lys
    1105                 1110                 1115

gga gag  gct gga gag cct ggc  gag aga ggc ctg aag  gga cac cgt      3556
Gly Glu  Ala Gly Glu Pro Gly  Glu Arg Gly Leu Lys  Gly His Arg
    1120                 1125                 1130

ggc ttc  act ggt ctg cag ggt  ctg ccc ggc cct cct  ggt cct tct      3601
Gly Phe  Thr Gly Leu Gln Gly  Leu Pro Gly Pro Pro  Gly Pro Ser
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gga gac  caa ggt gct tct ggt  cct gct ggt cct tct  ggc cct aga      3646
Gly Asp  Gln Gly Ala Ser Gly  Pro Ala Gly Pro Ser  Gly Pro Arg
    1150                 1155                 1160

ggt cct  cct ggc ccc gtc ggt  ccc tct ggc aaa gat  ggt gct aat      3691
Gly Pro  Pro Gly Pro Val Gly  Pro Ser Gly Lys Asp  Gly Ala Asn
    1165                 1170                 1175

gga atc  cct ggc ccc att ggg  cct cct ggt ccc cgt  gga cga tca      3736
Gly Ile  Pro Gly Pro Ile Gly  Pro Pro Gly Pro Arg  Gly Arg Ser
    1180                 1185                 1190

ggc gaa  acc ggt cct gct ggt  cct cct gga aat cct  ggg ccc cct      3781
Gly Glu  Thr Gly Pro Ala Gly  Pro Pro Gly Asn Pro  Gly Pro Pro
    1195                 1200                 1205
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ggt cct  cca ggt ccc cct ggc  cct ggc atc gac atg  tcc gcc ttt      3826
Gly Pro  Pro Gly Pro Pro Gly  Pro Gly Ile Asp Met  Ser Ala Phe
    1210                 1215                 1220

gct ggc  tta ggc ccg aga gag  aag ggc ccc gac ccc  ctg cag tac      3871
Ala Gly  Leu Gly Pro Arg Glu  Lys Gly Pro Asp Pro  Leu Gln Tyr
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atg cgg  gcc gac cag gca gcc  ggt ggc ctg aga cag  cat gac gcc      3916
Met Arg  Ala Asp Gln Ala Ala  Gly Gly Leu Arg Gln  His Asp Ala
    1240                 1245                 1250

gag gtg  gat gcc aca ctc aag  tcc ctc aac aac cag  att gag agc      3961
Glu Val  Asp Ala Thr Leu Lys  Ser Leu Asn Asn Gln  Ile Glu Ser
    1255                 1260                 1265

atc cgc  agc ccc gag ggc tcc  cgc aag aac cct gct  cgc acc tgc      4006
Ile Arg  Ser Pro Glu Gly Ser  Arg Lys Asn Pro Ala  Arg Thr Cys
    1270                 1275                 1280

aga gac  ctg aaa ctc tgc cac  cct gag tgg aag agt  gga gac tac      4051
Arg Asp  Leu Lys Leu Cys His  Pro Glu Trp Lys Ser  Gly Asp Tyr
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tgg att  gac ccc aac caa ggc  tgc acc ttg gac gcc  atg aag gtt      4096
Trp Ile  Asp Pro Asn Gln Gly  Cys Thr Leu Asp Ala  Met Lys Val
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ttc tgc  aac atg gag act ggc  gag act tgc gtc tac  ccc aat cca      4141
Phe Cys  Asn Met Glu Thr Gly  Glu Thr Cys Val Tyr  Pro Asn Pro
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gca aac  gtt ccc aag aag aac  tgg tgg agc agc aag  agc aag gag      4186
Ala Asn  Val Pro Lys Lys Asn  Trp Trp Ser Ser Lys  Ser Lys Glu
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aag aaa  cac atc tgg ttt gga  gaa acc atc aat ggt  ggc ttc cat    4231
Lys Lys  His Ile Trp Phe Gly  Glu Thr Ile Asn Gly  Gly Phe His
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ttc agc  tat gga gat gac aat  ctg gct ccc aac act  gcc aac gtc    4276
Phe Ser  Tyr Gly Asp Asp Asn  Leu Ala Pro Asn Thr  Ala Asn Val
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cag atg  acc ttc cta cgc ctg  ctg tcc acg gaa ggc  tcc cag aac    4321
Gln Met  Thr Phe Leu Arg Leu  Leu Ser Thr Glu Gly  Ser Gln Asn
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atc acc  tac cac tgc aag aac  agc att gcc tat ctg  gac gaa gca    4366
Ile Thr  Tyr His Cys Lys Asn  Ser Ile Ala Tyr Leu  Asp Glu Ala
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Ala Gly  Asn Leu Lys Lys Ala  Leu Leu Ile Gln Gly  Ser Asn Asp
    1405                 1410                 1415

gtg gag  atc cgg gca gag ggc  aat agc agg ttc acg  tac act gcc    4456
Val Glu  Ile Arg Ala Glu Gly  Asn Ser Arg Phe Thr  Tyr Thr Ala
    1420                 1425                 1430

ctg aag  gat ggc tgc acg aaa  cat acc ggt aag tgg  ggc aag act    4501
Leu Lys  Asp Gly Cys Thr Lys  His Thr Gly Lys Trp  Gly Lys Thr
    1435                 1440                 1445

gtt atc  gag tac cgg tca cag  aag acc tca cgc ctc  ccc atc att    4546
Val Ile  Glu Tyr Arg Ser Gln  Lys Thr Ser Arg Leu  Pro Ile Ile
    1450                 1455                 1460

gac att  gca ccc atg gac ata  gga ggg ccc gag cag  gaa ttc ggt    4591
Asp Ile  Ala Pro Met Asp Ile  Gly Gly Pro Glu Gln  Glu Phe Gly
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Val Asp Ile Gly Pro Val Cys Phe Leu
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ttcaggtgcc gggcgcagga actgtgtgtg tcctacacaa tggtgctatt ctgtgtcaaa 5001

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Ser Cys Val Gln Asp Gly Gln Arg Tyr Asn Asp Lys Asp Val Trp Lys
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Pro Glu Pro Cys Arg Ile Cys Val Cys Asp Thr Gly Thr Val Leu Cys
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Asp Asp Ile Ile Cys Glu Asp Val Lys Asp Cys Leu Ser Pro Glu Ile
65 70 75 80

Pro Phe Gly Glu Cys Cys Pro Ile Cys Pro Thr Asp Leu Ala Thr Ala
85 90 95

Ser Gly Gln Pro Gly Pro Lys Gly Gln Lys Gly Glu Pro Gly Asp Ile
100 105 110

Lys Asp Ile Val Gly Pro Lys Gly Pro Pro Gly Pro Gln Gly Pro Ala
115 120 125

Gly Glu Gln Gly Pro Arg Gly Asp Arg Gly Asp Lys Gly Glu Lys Gly
130 135 140

Ala Pro Gly Pro Arg Gly Arg Asp Gly Glu Pro Gly Thr Pro Gly Asn
145 150 155 160

Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Leu Gly
165 170 175

Gly Asn Phe Ala Ala Gln Met Ala Gly Gly Phe Asp Glu Lys Ala Gly
180 185 190

Gly Ala Gln Leu Gly Val Met Gln Gly Pro Met Gly Pro Met Gly Pro
195 200 205

Arg Gly Pro Pro Gly Pro Ala Gly Ala Pro Gly Pro Gln Gly Phe Gln
210 215 220

Gly Asn Pro Gly Glu Pro Gly Glu Pro Gly Val Ser Gly Pro Met Gly
225 230 235 240

Pro Arg Gly Pro Pro Gly Pro Pro Gly Lys Pro Gly Asp Asp Gly Glu
245 250 255

Ala Gly Lys Pro Gly Lys Ala Gly Glu Arg Gly Pro Pro Gly Pro Gln
260 265 270

Gly Ala Arg Gly Phe Pro Gly Thr Pro Gly Leu Pro Gly Val Lys Gly
275 280 285

His Arg Gly Tyr Pro Gly Leu Asp Gly Ala Lys Gly Glu Ala Gly Ala
290 295 300

Pro Gly Val Lys Gly Glu Ser Gly Ser Pro Gly Glu Asn Gly Ser Pro
305 310 315 320

Gly Pro Met Gly Pro Arg Gly Leu Pro Gly Glu Arg Gly Arg Thr Gly
325 330 335

Pro Ala Gly Ala Ala Gly Ala Arg Gly Asn Asp Gly Gln Pro Gly Pro
340 345 350

Ala Gly Pro Pro Gly Pro Val Gly Pro Ala Gly Gly Pro Gly Phe Pro
355 360 365

Gly Ala Pro Gly Ala Lys Gly Glu Ala Gly Pro Thr Gly Ala Arg Gly
370 375 380

Pro Glu Gly Ala Gln Gly Pro Arg Gly Glu Pro Gly Thr Pro Gly Ser
385 390 395 400

Pro Gly Pro Ala Gly Ala Ser Gly Asn Pro Gly Thr Asp Gly Ile Pro
405 410 415

Gly Ala Lys Gly Ser Ala Gly Ala Pro Gly Ile Ala Gly Ala Pro Gly
420 425 430

Phe Pro Gly Pro Arg Gly Pro Pro Gly Pro Gln Gly Ala Thr Gly Pro
435 440 445

Leu Gly Pro Lys Gly Gln Thr Gly Glu Pro Gly Ile Ala Gly Phe Lys
450 455 460

Gly Glu Gln Gly Pro Lys Gly Glu Pro Gly Pro Ala Gly Pro Gln Gly
465 470 475 480

Ala Pro Gly Pro Ala Gly Glu Glu Gly Lys Arg Gly Ala Arg Gly Glu
485 490 495

Pro Gly Gly Val Gly Pro Ile Gly Pro Pro Gly Glu Arg Gly Ala Pro
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Gly Asn Arg Gly Phe Pro Gly Gln Asp Gly Leu Ala Gly Pro Lys Gly
515 520 525

Ala Pro Gly Glu Arg Gly Pro Ser Gly Leu Ala Gly Pro Lys Gly Ala
530 535 540

Asn Gly Asp Pro Gly Arg Pro Gly Glu Pro Gly Leu Pro Gly Ala Arg
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Gly Leu Thr Gly Arg Pro Gly Asp Ala Gly Pro Gln Gly Lys Val Gly
565 570 575

Pro Ser Gly Ala Pro Gly Glu Asp Gly Arg Pro Gly Pro Pro Gly Pro
580 585 590

Gln Gly Ala Arg Gly Gln Pro Gly Val Met Gly Phe Pro Gly Pro Lys
595 600 605

Gly Ala Asn Gly Glu Pro Gly Lys Ala Gly Glu Lys Gly Leu Pro Gly
610 615 620

Ala Pro Gly Leu Arg Gly Leu Pro Gly Lys Asp Gly Glu Thr Gly Ala
625 630 635 640

Ala Gly Pro Pro Gly Pro Ala Gly Pro Ala Gly Glu Arg Gly Glu Gln
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Gly Ala Pro Gly Pro Ser Gly Phe Gln Gly Leu Pro Gly Pro Pro Gly
660 665 670

Pro Pro Gly Glu Gly Gly Lys Pro Gly Asp Gln Gly Val Pro Gly Glu
675 680 685

Ala Gly Ala Pro Gly Leu Val Gly Pro Arg Gly Glu Arg Gly Phe Pro
690 695 700

Gly Glu Arg Gly Ser Pro Gly Ala Gln Gly Leu Gln Gly Pro Arg Gly
705 710 715 720

Leu Pro Gly Thr Pro Gly Thr Asp Gly Pro Lys Gly Ala Ser Gly Pro
725 730 735

Ala Gly Pro Pro Gly Ala Gln Gly Pro Pro Gly Leu Gln Gly Met Pro
740 745 750

Gly Glu Arg Gly Ala Ala Gly Ile Ala Gly Pro Lys Gly Asp Arg Gly
755 760 765

Asp Val Gly Glu Lys Gly Pro Glu Gly Ala Pro Gly Lys Asp Gly Gly
770 775 780

Arg Gly Leu Thr Gly Pro Ile Gly Pro Pro Gly Pro Ala Gly Ala Asn
785 790 795 800

Gly Glu Lys Gly Glu Val Gly Pro Pro Gly Pro Ala Gly Ser Ala Gly
805 810 815

Ala Arg Gly Ala Pro Gly Glu Arg Gly Glu Thr Gly Pro Pro Gly Pro
820 825 830

Ala Gly Phe Ala Gly Pro Pro Gly Ala Asp Gly Gln Pro Gly Ala Lys
835 840 845

Gly Glu Gln Gly Glu Ala Gly Gln Lys Gly Asp Ala Gly Ala Pro Gly
850 855 860

Pro Gln Gly Pro Ser Gly Ala Pro Gly Pro Gln Gly Pro Thr Gly Val
865 870 875 880

Thr Gly Pro Lys Gly Ala Arg Gly Ala Gln Gly Pro Pro Gly Ala Thr
885 890 895

Gly Phe Pro Gly Ala Ala Gly Arg Val Gly Pro Pro Gly Ser Asn Gly
900 905 910

Asn Pro Gly Pro Pro Gly Pro Pro Gly Pro Ser Gly Lys Asp Gly Pro
915 920 925

Lys Gly Ala Arg Gly Asp Ser Gly Pro Pro Gly Arg Ala Gly Glu Pro
930 935 940

Gly Leu Gln Gly Pro Ala Gly Pro Pro Gly Glu Lys Gly Glu Pro Gly
945 950 955 960

Asp Asp Gly Pro Ser Gly Ala Glu Gly Pro Pro Gly Pro Gln Gly Leu
965 970 975

Ala Gly Gln Arg Gly Ile Val Gly Leu Pro Gly Gln Arg Gly Glu Arg
980 985 990

Gly Phe Pro Gly Leu Pro Gly Pro Ser Gly Glu Pro Gly Lys Gln Gly
995 1000 1005

Ala Pro Gly Ala Ser Gly Asp Arg Gly Pro Pro Gly Pro Val Gly
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Pro Pro Gly Leu Thr Gly Pro Ala Gly Glu Pro Gly Arg Glu Gly
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Ser Pro Gly Ala Asp Gly Pro Pro Gly Arg Asp Gly Ala Ala Gly
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Val Lys Gly Asp Arg Gly Glu Thr Gly Ala Val Gly Ala Pro Gly
1055 1060 1065

Ala Pro Gly Pro Pro Gly Ser Pro Gly Pro Ala Gly Pro Thr Gly
1070 1075 1080

Lys Gln Gly Asp Arg Gly Glu Ala Gly Ala Gln Gly Pro Met Gly
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Pro Ser Gly Pro Ala Gly Ala Arg Gly Ile Gln Gly Pro Gln Gly
1100 1105 1110

Pro Arg Gly Asp Lys Gly Glu Ala Gly Glu Pro Gly Glu Arg Gly
1115 1120 1125

Leu Lys Gly His Arg Gly Phe Thr Gly Leu Gln Gly Leu Pro Gly
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Pro Pro Gly Pro Ser Gly Asp Gln Gly Ala Ser Gly Pro Ala Gly
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Pro Ser Gly Pro Arg Gly Pro Pro Gly Pro Val Gly Pro Ser Gly
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Lys Asp Gly Ala Asn Gly Ile Pro Gly Pro Ile Gly Pro Pro Gly
1175 1180 1185

Pro Arg Gly Arg Ser Gly Glu Thr Gly Pro Ala Gly Pro Pro Gly
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Asn Pro Gly Pro Pro Gly Pro Pro Gly Pro Pro Gly Pro Gly Ile
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Asp Met Ser Ala Phe Ala Gly Leu Gly Pro Arg Glu Lys Gly Pro
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Asp Pro Leu Gln Tyr Met Arg Ala Asp Gln Ala Ala Gly Gly Leu
1235 1240 1245

Arg Gln His Asp Ala Glu Val Asp Ala Thr Leu Lys Ser Leu Asn
1250 1255 1260

Asn Gln Ile Glu Ser Ile Arg Ser Pro Glu Gly Ser Arg Lys Asn
1265 1270 1275

Pro Ala Arg Thr Cys Arg Asp Leu Lys Leu Cys His Pro Glu Trp
1280 1285 1290

Lys Ser Gly Asp Tyr Trp Ile Asp Pro Asn Gln Gly Cys Thr Leu
1295 1300 1305

Asp Ala Met Lys Val Phe Cys Asn Met Glu Thr Gly Glu Thr Cys
1310 1315 1320

Val Tyr Pro Asn Pro Ala Asn Val Pro Lys Lys Asn Trp Trp Ser
1325 1330 1335

Ser Lys Ser Lys Glu Lys Lys His Ile Trp Phe Gly Glu Thr Ile
1340 1345 1350

Asn Gly Gly Phe His Phe Ser Tyr Gly Asp Asp Asn Leu Ala Pro
1355 1360 1365

Asn Thr Ala Asn Val Gln Met Thr Phe Leu Arg Leu Leu Ser Thr
1370 1375 1380

Glu Gly Ser Gln Asn Ile Thr Tyr His Cys Lys Asn Ser Ile Ala
1385 1390 1395

Tyr Leu Asp Glu Ala Ala Gly Asn Leu Lys Lys Ala Leu Leu Ile
1400 1405 1410

Gln Gly Ser Asn Asp Val Glu Ile Arg Ala Glu Gly Asn Ser Arg
1415 1420 1425

Phe Thr Tyr Thr Ala Leu Lys Asp Gly Cys Thr Lys His Thr Gly
1430 1435 1440

Lys Trp Gly Lys Thr Val Ile Glu Tyr Arg Ser Gln Lys Thr Ser
1445 1450 1455

Arg Leu Pro Ile Ile Asp Ile Ala Pro Met Asp Ile Gly Gly Pro
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Met Thr Thr Leu Leu Trp Val Phe Val Thr Leu Arg Val Ile Thr Ala
1 5 10 15

gct gtc act gta gaa act tca gac cat gac aac tcg ctg agt gtc agc 156
Ala Val Thr Val Glu Thr Ser Asp His Asp Asn Ser Leu Ser Val Ser
20 25 30

atc ccc caa ccg tcc ccg ctg agg gtc ctc ctg ggg acc tcc ctc acc 204
Ile Pro Gln Pro Ser Pro Leu Arg Val Leu Leu Gly Thr Ser Leu Thr
35 40 45

atc ccc tgc tat ttc atc gac ccc atg cac cct gtg acc acc gcc cct 252

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Ile Pro Cys Tyr Phe Ile Asp Pro Met His Pro Val Thr Thr Ala Pro
    50                  55                  60

tct acc gcc cca ctg gcc cca aga atc aag tgg agc cgt gtg tcc aag      300
Ser Thr Ala Pro Leu Ala Pro Arg Ile Lys Trp Ser Arg Val Ser Lys
65                  70                  75                  80

gag aag gag gta gtg ctg ctg gtg gcc act gaa ggg cgc gtg cgg gtc      348
Glu Lys Glu Val Val Leu Leu Val Ala Thr Glu Gly Arg Val Arg Val
                85                  90                  95

aac agt gcc tat cag gac aag gtc tca ctg ccc aac tac ccg gcc atc      396
Asn Ser Ala Tyr Gln Asp Lys Val Ser Leu Pro Asn Tyr Pro Ala Ile
            100                 105                 110

ccc agt gac gcc acc ttg gaa gtc cag agc ctg cgc tcc aat gac tct      444
Pro Ser Asp Ala Thr Leu Glu Val Gln Ser Leu Arg Ser Asn Asp Ser
        115                 120                 125

ggg gtc tac cgc tgc gag gtg atg cat ggc atc gag gac agc gag gcc      492
Gly Val Tyr Arg Cys Glu Val Met His Gly Ile Glu Asp Ser Glu Ala
    130                 135                 140

acc ctg gaa gtc gtg gtg aaa ggc atc gtg ttc cat tac aga gcc atc      540
Thr Leu Glu Val Val Val Lys Gly Ile Val Phe His Tyr Arg Ala Ile
145                 150                 155                 160

tct aca cgc tac acc ctc gac ttt gac agg gcg cag cgg gcc tgc ctg      588
Ser Thr Arg Tyr Thr Leu Asp Phe Asp Arg Ala Gln Arg Ala Cys Leu
                165                 170                 175

cag aac agt gcc atc att gcc acg cct gag cag ctg cag gcc gcc tac      636
Gln Asn Ser Ala Ile Ile Ala Thr Pro Glu Gln Leu Gln Ala Ala Tyr
            180                 185                 190

gaa gac ggc ttc cac cag tgt gac gcc ggc tgg ctg gct gac cag act      684
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Glu Asp Gly Phe His Gln Cys Asp Ala Gly Trp Leu Ala Asp Gln Thr
        195                 200                 205

gtc aga tac ccc atc cac act ccc cgg gaa ggc tgc tat gga gac aag      732
Val Arg Tyr Pro Ile His Thr Pro Arg Glu Gly Cys Tyr Gly Asp Lys
    210                 215                 220

gat gag ttt cct ggt gtg agg acg tat ggc atc cga gac acc aac gag      780
Asp Glu Phe Pro Gly Val Arg Thr Tyr Gly Ile Arg Asp Thr Asn Glu
225                 230                 235                 240

acc tat gat gtg tac tgc ttc gcc gag gag atg gag ggt gag gtc ttt      828
Thr Tyr Asp Val Tyr Cys Phe Ala Glu Glu Met Glu Gly Glu Val Phe
                245                 250                 255

tat gca aca tct cca gag aag ttc acc ttc cag gaa gca gcc aat gag      876
Tyr Ala Thr Ser Pro Glu Lys Phe Thr Phe Gln Glu Ala Ala Asn Glu
            260                 265                 270

tgc cgg cgg ctg ggt gcc cgg ctg gcc acc acg ggc cac gtc tac ctg      924
Cys Arg Arg Leu Gly Ala Arg Leu Ala Thr Thr Gly His Val Tyr Leu
        275                 280                 285

gcc tgg cag gct ggc atg gac atg tgc agc gcc ggc tgg ctg gcc gac      972
Ala Trp Gln Ala Gly Met Asp Met Cys Ser Ala Gly Trp Leu Ala Asp
    290                 295                 300

cgc agc gtg cgc tac ccc atc tcc aag gcc cgg ccc aac tgc ggt ggc     1020
Arg Ser Val Arg Tyr Pro Ile Ser Lys Ala Arg Pro Asn Cys Gly Gly
305                 310                 315                 320

aac ctc ctg ggc gtg agg acc gtc tac gtg cat gcc aac cag acg ggc     1068
Asn Leu Leu Gly Val Arg Thr Val Tyr Val His Ala Asn Gln Thr Gly
                325                 330                 335

tac ccc gac ccc tca tcc cgc tac gac gcc atc tgc tac aca ggt gaa     1116
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```
Tyr Pro Asp Pro Ser Ser Arg Tyr Asp Ala Ile Cys Tyr Thr Gly Glu
            340                 345                 350

gac ttt gtg gac atc cca gaa aac ttc ttt gga gtg ggg ggt gag gag    1164
Asp Phe Val Asp Ile Pro Glu Asn Phe Phe Gly Val Gly Gly Glu Glu
        355                 360                 365

gac atc acc gtc cag aca gtg acc tgg cct gac atg gag ctg cca ctg    1212
Asp Ile Thr Val Gln Thr Val Thr Trp Pro Asp Met Glu Leu Pro Leu
    370                 375                 380

cct cga aac atc act gag ggt gaa gcc cga ggc agc gtg atc ctt acc    1260
Pro Arg Asn Ile Thr Glu Gly Glu Ala Arg Gly Ser Val Ile Leu Thr
385                 390                 395                 400

gta aag ccc atc ttc gag gtc tcc ccc agt ccc ctg gaa ccc gag gag    1308
Val Lys Pro Ile Phe Glu Val Ser Pro Ser Pro Leu Glu Pro Glu Glu
                405                 410                 415

ccc ttc acg ttt gcc cct gaa ata ggg gcc act gcc ttc gct gag gtt    1356
Pro Phe Thr Phe Ala Pro Glu Ile Gly Ala Thr Ala Phe Ala Glu Val
            420                 425                 430

gag aat gag act gga gag gcc acc agg ccc tgg ggc ttt ccc aca cct    1404
Glu Asn Glu Thr Gly Glu Ala Thr Arg Pro Trp Gly Phe Pro Thr Pro
        435                 440                 445

ggc ctg ggc cct gcc acg gca ttc acc agt gag gac ctc gtc gtg cag    1452
Gly Leu Gly Pro Ala Thr Ala Phe Thr Ser Glu Asp Leu Val Val Gln
    450                 455                 460

gtg acc gct gtc cct ggg cag ccg cat ttg cca ggg ggg gtc gtc ttc    1500
Val Thr Ala Val Pro Gly Gln Pro His Leu Pro Gly Gly Val Val Phe
465                 470                 475                 480

cac tac cgc ccg gga ccc acc cgc tac tcg ctg acc ttt gag gag gca    1548
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His Tyr Arg Pro Gly Pro Thr Arg Tyr Ser Leu Thr Phe Glu Glu Ala
                485                 490                 495

cag cag gcc tgc cct ggc acg ggg gcg gtc att gcc tcg ccg gag cag    1596
Gln Gln Ala Cys Pro Gly Thr Gly Ala Val Ile Ala Ser Pro Glu Gln
            500                 505                 510

ctc cag gcc gcc tac gaa gca ggc tat gag cag tgt gac gcc ggc tgg    1644
Leu Gln Ala Ala Tyr Glu Ala Gly Tyr Glu Gln Cys Asp Ala Gly Trp
        515                 520                 525

ctg cgg gac cag acc gtc aga tac ccc att gtg agc cca cgg acc cca    1692
Leu Arg Asp Gln Thr Val Arg Tyr Pro Ile Val Ser Pro Arg Thr Pro
    530                 535                 540

tgc gtg ggt gac aag gac agc agc cca ggg gtc agg acc tat ggc gtg    1740
Cys Val Gly Asp Lys Asp Ser Ser Pro Gly Val Arg Thr Tyr Gly Val
545                 550                 555                 560

cgc cca tca aca gag acc tac gat gtc tac tgc ttt gta gac aga ctt    1788
Arg Pro Ser Thr Glu Thr Tyr Asp Val Tyr Cys Phe Val Asp Arg Leu
                565                 570                 575

gag ggg gag gtg ttc ttc gcc aca cgc ctt gag cag ttc acc ttc cag    1836
Glu Gly Glu Val Phe Phe Ala Thr Arg Leu Glu Gln Phe Thr Phe Gln
            580                 585                 590

gaa gca ctg gag ttc tgt gaa tct cac aat gcc act gcc acc acg ggc    1884
Glu Ala Leu Glu Phe Cys Glu Ser His Asn Ala Thr Ala Thr Thr Gly
        595                 600                 605

cag ctc tac gcc gcc tgg agc cgc ggc ctg gac aag tgc tat gcc ggc    1932
Gln Leu Tyr Ala Ala Trp Ser Arg Gly Leu Asp Lys Cys Tyr Ala Gly
    610                 615                 620

tgg ctg gcc gac ggc agc ctc cgc tac ccc atc gtc acc cca agg cct    1980
```

```
Trp Leu Ala Asp Gly Ser Leu Arg Tyr Pro Ile Val Thr Pro Arg Pro
625                 630                 635                 640

gcc tgc ggt ggg gac aag cca ggc gtg aga acg gtc tac ctc tac cct     2028
Ala Cys Gly Gly Asp Lys Pro Gly Val Arg Thr Val Tyr Leu Tyr Pro
                645                 650                 655

aac cag acg ggc ctc cca gac cca ctg tcc cgg cac cat gcc ttc tgc     2076
Asn Gln Thr Gly Leu Pro Asp Pro Leu Ser Arg His His Ala Phe Cys
            660                 665                 670

ttc cga ggc att tca gcg gtt cct tct cca gga gaa gaa gag ggt ggc     2124
Phe Arg Gly Ile Ser Ala Val Pro Ser Pro Gly Glu Glu Glu Gly Gly
        675                 680                 685

aca ccc aca tca ccc tct ggt gtg gag gag tgg atc gtg acc caa gtg     2172
Thr Pro Thr Ser Pro Ser Gly Val Glu Glu Trp Ile Val Thr Gln Val
    690                 695                 700

gtt cct ggt gtg gct gct gtc ccc gta gaa gag gag aca act gct gta     2220
Val Pro Gly Val Ala Ala Val Pro Val Glu Glu Glu Thr Thr Ala Val
705                 710                 715                 720

ccc tca ggg gag act act gcc atc cta gag ttc acc acc gag cca gaa     2268
Pro Ser Gly Glu Thr Thr Ala Ile Leu Glu Phe Thr Thr Glu Pro Glu
                725                 730                 735

aac cag aca gaa tgg gaa cca gcc tat acc cca gtg ggc aca tcc ccg     2316
Asn Gln Thr Glu Trp Glu Pro Ala Tyr Thr Pro Val Gly Thr Ser Pro
            740                 745                 750

ctg cca ggg atc ctt cct act tgg cct cct act ggc gcc gaa aca gag     2364
Leu Pro Gly Ile Leu Pro Thr Trp Pro Pro Thr Gly Ala Glu Thr Glu
        755                 760                 765

gaa agt aca gaa ggc cct tct gca act gaa gtg ccc tct gcc tca gag     2412
```

```
Glu Ser Thr Glu Gly Pro Ser Ala Thr Glu Val Pro Ser Ala Ser Glu
    770                 775                 780

gaa cca tcc ccc tca gag gtg cca ttc ccc tca gag gag cca tcc ccc    2460
Glu Pro Ser Pro Ser Glu Val Pro Phe Pro Ser Glu Glu Pro Ser Pro
785                 790                 795                 800

tca gag gaa cca ttc ccc tca gtg agg cca ttc ccc tca gtg gag ctg    2508
Ser Glu Glu Pro Phe Pro Ser Val Arg Pro Phe Pro Ser Val Glu Leu
                805                 810                 815

ttc ccc tca gag gag cca ttc ccc tcc aag gag cca tcc ccc tca gag    2556
Phe Pro Ser Glu Glu Pro Phe Pro Ser Lys Glu Pro Ser Pro Ser Glu
            820                 825                 830

gaa cca tca gcc tca gaa gag ccg tat aca cct tca ccc ccc gag ccc    2604
Glu Pro Ser Ala Ser Glu Glu Pro Tyr Thr Pro Ser Pro Pro Glu Pro
        835                 840                 845

agc tgg act gag ctg ccc agc tct ggg gag gaa tct ggg gcc cct gat    2652
Ser Trp Thr Glu Leu Pro Ser Ser Gly Glu Glu Ser Gly Ala Pro Asp
    850                 855                 860

gtc agt ggt gac ttc aca ggc agt gga gat gtt tca gga cac ctt gac    2700
Val Ser Gly Asp Phe Thr Gly Ser Gly Asp Val Ser Gly His Leu Asp
865                 870                 875                 880

ttc agt ggg cag ctg tca ggg gac agg gca agt gga ctg ccc tct gga    2748
Phe Ser Gly Gln Leu Ser Gly Asp Arg Ala Ser Gly Leu Pro Ser Gly
                885                 890                 895

gac ctg gac tcc agt ggt ctt act tcc aca gtg ggc tca ggc ctg act    2796
Asp Leu Asp Ser Ser Gly Leu Thr Ser Thr Val Gly Ser Gly Leu Thr
            900                 905                 910

gtg gaa agt gga cta ccc tca ggg gat gaa gag aga att gag tgg ccc    2844
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```
Val Glu Ser Gly Leu Pro Ser Gly Asp Glu Glu Arg Ile Glu Trp Pro
        915                 920                 925

agc act cct acg gtt ggt gaa ctg ccc tct gga gct gag atc cta gag     2892
Ser Thr Pro Thr Val Gly Glu Leu Pro Ser Gly Ala Glu Ile Leu Glu
    930                 935                 940

ggc tct gcc tct gga gtt ggg gat ctc agt gga ctt cct tct gga gaa     2940
Gly Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro Ser Gly Glu
945                 950                 955                 960

gtt cta gag acc tct gcc tct gga gta gga gac ctc agt ggg ctt cct     2988
Val Leu Glu Thr Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro
                965                 970                 975

tct gga gaa gtt cta gag acc act gcc cct gga gta gag gac atc agc     3036
Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser
            980                 985                 990

ggg ctt cct tct gga gaa gtt cta  gag acc act gcc cct  gga gta gag   3084
Gly Leu Pro Ser Gly Glu Val Leu  Glu Thr Thr Ala Pro  Gly Val Glu
        995                 1000                1005

gac atc  agc ggg ctt cct tct  gga gaa gtt cta gag  acc act gcc      3129
Asp Ile  Ser Gly Leu Pro Ser  Gly Glu Val Leu Glu  Thr Thr Ala
    1010                1015                1020

cct gga  gta gag gac atc agc  ggg ctt cct tct gga  gaa gtt cta      3174
Pro Gly  Val Glu Asp Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu
    1025                1030                1035

gag acc  act gcc cct gga gta  gag gac atc agc ggg  ctt cct tct      3219
Glu Thr  Thr Ala Pro Gly Val  Glu Asp Ile Ser Gly  Leu Pro Ser
    1040                1045                1050

gga gaa  gtt cta gag acc act  gcc cct gga gta gag  gac atc agc      3264
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```
Gly Glu  Val Leu Glu Thr Thr  Ala Pro Gly Val Glu  Asp Ile Ser
    1055                 1060                 1065

ggg ctt  cct tct gga gaa gtt  cta gag acc gct gcc  cct gga gta      3309
Gly Leu  Pro Ser Gly Glu Val  Leu Glu Thr Ala Ala  Pro Gly Val
    1070                 1075                 1080

gag gac  atc agc ggg ctt cct  tct gga gaa gtt cta  gag acc gct      3354
Glu Asp  Ile Ser Gly Leu Pro  Ser Gly Glu Val Leu  Glu Thr Ala
    1085                 1090                 1095

gcc cct  gga gta gag gac atc  agc ggg ctt cct tct  gga gaa gtt      3399
Ala Pro  Gly Val Glu Asp Ile  Ser Gly Leu Pro Ser  Gly Glu Val
    1100                 1105                 1110

cta gag  acc gct gcc cct gga  gta gag gac atc agc  ggg ctt cct      3444
Leu Glu  Thr Ala Ala Pro Gly  Val Glu Asp Ile Ser  Gly Leu Pro
    1115                 1120                 1125

tct gga  gaa gtt cta gag acc  gct gcc cct gga gta  gag gac atc      3489
Ser Gly  Glu Val Leu Glu Thr  Ala Ala Pro Gly Val  Glu Asp Ile
    1130                 1135                 1140

agc ggg  ctt cct tct gga gaa  gtt cta gag acc gct  gcc cct gga      3534
Ser Gly  Leu Pro Ser Gly Glu  Val Leu Glu Thr Ala  Ala Pro Gly
    1145                 1150                 1155

gta gag  gac atc agc ggg ctt  cct tct gga gaa gtt  cta gag acc      3579
Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly Glu Val  Leu Glu Thr
    1160                 1165                 1170

gct gcc  cct gga gta gag gac  atc agc ggg ctt cct  tct gga gaa      3624
Ala Ala  Pro Gly Val Glu Asp  Ile Ser Gly Leu Pro  Ser Gly Glu
    1175                 1180                 1185

gtt cta  gag acc gct gcc cct  gga gta gag gac atc  agc ggg ctt      3669
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Val Leu  Glu Thr Ala Ala Pro  Gly Val Glu Asp Ile  Ser Gly Leu
    1190                 1195                 1200

cct tct  gga gaa gtt cta gag  act gct gcc cct gga  gta gag gac    3714
Pro Ser  Gly Glu Val Leu Glu  Thr Ala Ala Pro Gly  Val Glu Asp
    1205                 1210                 1215

atc agc  ggg ctt cct tct gga  gaa gtt cta gag act  gct gcc cct    3759
Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu Glu Thr  Ala Ala Pro
    1220                 1225                 1230

gga gta  gag gac atc agc ggg  ctt cct tct gga gaa  gtt cta gag    3804
Gly Val  Glu Asp Ile Ser Gly  Leu Pro Ser Gly Glu  Val Leu Glu
    1235                 1240                 1245

act gct  gcc cct gga gta gag  gac atc agc ggg ctt  cct tct gga    3849
Thr Ala  Ala Pro Gly Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly
    1250                 1255                 1260

gaa gtt  cta gag act gct gcc  cct gga gta gag gac  atc agc ggg    3894
Glu Val  Leu Glu Thr Ala Ala  Pro Gly Val Glu Asp  Ile Ser Gly
    1265                 1270                 1275

ctt cct  tct gga gaa gtt cta  gag act act gcc cct  gga gta gag    3939
Leu Pro  Ser Gly Glu Val Leu  Glu Thr Thr Ala Pro  Gly Val Glu
    1280                 1285                 1290

gag atc  agc ggg ctt cct tct  gga gaa gtt cta gag  act act gcc    3984
Glu Ile  Ser Gly Leu Pro Ser  Gly Glu Val Leu Glu  Thr Thr Ala
    1295                 1300                 1305

cct gga  gta gat gag atc agt  ggg ctt cct tct gga  gaa gtt cta    4029
Pro Gly  Val Asp Glu Ile Ser  Gly Leu Pro Ser Gly  Glu Val Leu
    1310                 1315                 1320

gag act  act gcc cct gga gta  gag gag atc agc ggg  ctt cct tct    4074
```

```
Glu Thr  Thr Ala Pro Gly Val  Glu Glu Ile Ser Gly  Leu Pro Ser
    1325                 1330                 1335

gga gaa  gtt cta gag act tct  acc tct gcg gta ggg  gac ctc agt      4119
Gly Glu  Val Leu Glu Thr Ser  Thr Ser Ala Val Gly  Asp Leu Ser
    1340                 1345                 1350

gga ctt  cct tct gga gga gaa  gtt cta gag att tct  gtc tct gga      4164
Gly Leu  Pro Ser Gly Gly Glu  Val Leu Glu Ile Ser  Val Ser Gly
    1355                 1360                 1365

gta gag  gac atc agt ggg ctt  cct tct gga gag gtt  gta gag act      4209
Val Glu  Asp Ile Ser Gly Leu  Pro Ser Gly Glu Val  Val Glu Thr
    1370                 1375                 1380

tct gcc  tct gga ata gag gat  gtc agt gaa ctt cct  tca gga gaa      4254
Ser Ala  Ser Gly Ile Glu Asp  Val Ser Glu Leu Pro  Ser Gly Glu
    1385                 1390                 1395

ggt cta  gag acc tct gct tct  gga gta gag gac ctc  agc agg ctc      4299
Gly Leu  Glu Thr Ser Ala Ser  Gly Val Glu Asp Leu  Ser Arg Leu
    1400                 1405                 1410

cct tct  gga gaa gaa gtt cta  gag att tct gcc tct  gga ttt ggg      4344
Pro Ser  Gly Glu Glu Val Leu  Glu Ile Ser Ala Ser  Gly Phe Gly
    1415                 1420                 1425

gac ctc  agt gga gtt cct tct  gga gga gaa ggt cta  gag acc tct      4389
Asp Leu  Ser Gly Val Pro Ser  Gly Gly Glu Gly Leu  Glu Thr Ser
    1430                 1435                 1440

gct tct  gaa gta ggg act gac  ctc agt ggg ctt cct  tct gga agg      4434
Ala Ser  Glu Val Gly Thr Asp  Leu Ser Gly Leu Pro  Ser Gly Arg
    1445                 1450                 1455

gag ggt  cta gag act tca gct  tct gga gct gag gac  ctc agt ggg      4479
```

```
Glu Gly  Leu Glu Thr Ser Ala  Ser Gly Ala Glu Asp  Leu Ser Gly
    1460                 1465                 1470

ttg cct  tct gga aaa gaa gac  ttg gtg ggg tca gct  tct gga gac      4524
Leu Pro  Ser Gly Lys Glu Asp  Leu Val Gly Ser Ala  Ser Gly Asp
    1475                 1480                 1485

ttg gac  ttg ggc aaa ctg cct  tct gga act cta gga  agt ggg caa      4569
Leu Asp  Leu Gly Lys Leu Pro  Ser Gly Thr Leu Gly  Ser Gly Gln
    1490                 1495                 1500

gct cca  gaa aca agt ggt ctt  ccc tct gga ttt agt  ggt gag tat      4614
Ala Pro  Glu Thr Ser Gly Leu  Pro Ser Gly Phe Ser  Gly Glu Tyr
    1505                 1510                 1515

tct ggg  gtg gac ctt gga agt  ggc cca ccc tct ggc  ctg cct gac      4659
Ser Gly  Val Asp Leu Gly Ser  Gly Pro Pro Ser Gly  Leu Pro Asp
    1520                 1525                 1530

ttt agt  gga ctt cca tct gga  ttc cca act gtt tcc  cta gtg gat      4704
Phe Ser  Gly Leu Pro Ser Gly  Phe Pro Thr Val Ser  Leu Val Asp
    1535                 1540                 1545

tct aca  ttg gtg gaa gtg gtc  aca gcc tcc act gca  agt gaa ctg      4749
Ser Thr  Leu Val Glu Val Val  Thr Ala Ser Thr Ala  Ser Glu Leu
    1550                 1555                 1560

gaa ggg  agg gga acc att ggc  atc agt ggt gca gga  gaa ata tct      4794
Glu Gly  Arg Gly Thr Ile Gly  Ile Ser Gly Ala Gly  Glu Ile Ser
    1565                 1570                 1575

gga ctg  ccc tcc agt gag ctg  gac att agt ggg aga  gct agt gga      4839
Gly Leu  Pro Ser Ser Glu Leu  Asp Ile Ser Gly Arg  Ala Ser Gly
    1580                 1585                 1590

ctc cct  tca gga act gaa ctc  agt ggc caa gca tct  ggg tct cct      4884
```

```
Leu Pro  Ser Gly Thr Glu Leu  Ser Gly Gln Ala Ser  Gly Ser Pro
    1595                 1600                 1605

gat gtc  agt ggg gaa ata cct  gga ctc ttt ggt gtc  agt gga cag      4929
Asp Val  Ser Gly Glu Ile Pro  Gly Leu Phe Gly Val  Ser Gly Gln
    1610                 1615                 1620

cca tca  ggg ttt cct gac act  agt ggg gaa aca tct  gga gtg act      4974
Pro Ser  Gly Phe Pro Asp Thr  Ser Gly Glu Thr Ser  Gly Val Thr
    1625                 1630                 1635

gag ctt  agc ggg ctg tcc tct  gga caa cca ggt gtt  agt gga gaa      5019
Glu Leu  Ser Gly Leu Ser Ser  Gly Gln Pro Gly Val  Ser Gly Glu
    1640                 1645                 1650

gca tct  gga gtt ctt tat ggc  act agt caa ccc ttt  ggc ata act      5064
Ala Ser  Gly Val Leu Tyr Gly  Thr Ser Gln Pro Phe  Gly Ile Thr
    1655                 1660                 1665

gat ctg  agt gga gaa aca tct  ggg gtc cct gat ctc  agt ggg cag      5109
Asp Leu  Ser Gly Glu Thr Ser  Gly Val Pro Asp Leu  Ser Gly Gln
    1670                 1675                 1680

cct tca  ggg tta cca ggg ttc  agt ggg gca aca tca  gga gtc cct      5154
Pro Ser  Gly Leu Pro Gly Phe  Ser Gly Ala Thr Ser  Gly Val Pro
    1685                 1690                 1695

gac ctg  gtt tct ggt acc acg  agt ggc agc ggt gaa  tct tct ggg      5199
Asp Leu  Val Ser Gly Thr Thr  Ser Gly Ser Gly Glu  Ser Ser Gly
    1700                 1705                 1710

att aca  ttt gtg gac acc agt  ttg gtt gaa gtg gcc  cct act aca      5244
Ile Thr  Phe Val Asp Thr Ser  Leu Val Glu Val Ala  Pro Thr Thr
    1715                 1720                 1725

ttt aaa  gaa gaa gaa ggc tta  ggg tct gtg gaa ctc  agt ggc ctc      5289
```

```
Phe Lys  Glu Glu Glu Gly Leu  Gly Ser Val Glu Leu  Ser Gly Leu
    1730                 1735                 1740

cct tcc  gga gag gca gat ctg  tca ggc aaa tct ggg  atg gtg gat      5334
Pro Ser  Gly Glu Ala Asp Leu  Ser Gly Lys Ser Gly  Met Val Asp
    1745                 1750                 1755

gtc agt  gga cag ttt tct gga  aca gtc gat tcc agt  ggg ttt aca      5379
Val Ser  Gly Gln Phe Ser Gly  Thr Val Asp Ser Ser  Gly Phe Thr
    1760                 1765                 1770

tcc cag  act ccg gaa ttc agt  ggc cta cca agt ggc  ata gct gag      5424
Ser Gln  Thr Pro Glu Phe Ser  Gly Leu Pro Ser Gly  Ile Ala Glu
    1775                 1780                 1785

gtc agt  gga gaa tcc tcc aga  gct gag att ggg agc  agc ctg ccc      5469
Val Ser  Gly Glu Ser Ser Arg  Ala Glu Ile Gly Ser  Ser Leu Pro
    1790                 1795                 1800

tcg gga  gca tat tat ggc agt  gga act cca tct agt  ttc ccc acg      5514
Ser Gly  Ala Tyr Tyr Gly Ser  Gly Thr Pro Ser Ser  Phe Pro Thr
    1805                 1810                 1815

gtc tct  ctt gta gac aga act  ttg gtg gaa tct gta  acc cag gct      5559
Val Ser  Leu Val Asp Arg Thr  Leu Val Glu Ser Val  Thr Gln Ala
    1820                 1825                 1830

cca aca  gcc caa gag gca gga  gaa ggg cct tct ggc  att tta gaa      5604
Pro Thr  Ala Gln Glu Ala Gly  Glu Gly Pro Ser Gly  Ile Leu Glu
    1835                 1840                 1845

ctc agt  ggt gct cat tct gga  gca cca gac atg tct  ggg gag cat      5649
Leu Ser  Gly Ala His Ser Gly  Ala Pro Asp Met Ser  Gly Glu His
    1850                 1855                 1860

tct gga  ttt ctg gac cta agt  ggg ctg cag tcc ggg  ctg ata gag      5694
```

```
Ser Gly  Phe Leu Asp Leu Ser  Gly Leu Gln Ser Gly  Leu Ile Glu
    1865                 1870                 1875

ccc agc  gga gag cca cca ggt  act cca tat ttt agt  ggg gat ttt    5739
Pro Ser  Gly Glu Pro Pro Gly  Thr Pro Tyr Phe Ser  Gly Asp Phe
    1880                 1885                 1890

gcc agc  acc acc aat gta agt  gga gaa tcc tct gta  gcc atg ggc    5784
Ala Ser  Thr Thr Asn Val Ser  Gly Glu Ser Ser Val  Ala Met Gly
    1895                 1900                 1905

acc agt  gga gag gcc tca gga  ctt cca gaa gtt act  tta atc act    5829
Thr Ser  Gly Glu Ala Ser Gly  Leu Pro Glu Val Thr  Leu Ile Thr
    1910                 1915                 1920

tct gag  ttc gtg gag ggt gtt  act gaa cca act att  tct cag gaa    5874
Ser Glu  Phe Val Glu Gly Val  Thr Glu Pro Thr Ile  Ser Gln Glu
    1925                 1930                 1935

cta ggc  caa agg ccc cct gtg  aca cac aca ccc cag  ctt ttt gag    5919
Leu Gly  Gln Arg Pro Pro Val  Thr His Thr Pro Gln  Leu Phe Glu
    1940                 1945                 1950

tcc agt  gga aaa gtc tcc aca  gct ggg gac att agt  gga gct acc    5964
Ser Ser  Gly Lys Val Ser Thr  Ala Gly Asp Ile Ser  Gly Ala Thr
    1955                 1960                 1965

cca gtg  ctc cct ggg tct gga  gta gaa gta tca tca  gtc cca gaa    6009
Pro Val  Leu Pro Gly Ser Gly  Val Glu Val Ser Ser  Val Pro Glu
    1970                 1975                 1980

tct agc  agt gag acg tcc gcc  tat cct gaa gct ggg  ttc ggg gca    6054
Ser Ser  Ser Glu Thr Ser Ala  Tyr Pro Glu Ala Gly  Phe Gly Ala
    1985                 1990                 1995

tct gcc  gcc cct gag gcc agc  aga gaa gat tct ggg  tcc cct gat    6099
```

```
Ser Ala  Ala Pro Glu Ala Ser  Arg Glu Asp Ser Gly  Ser Pro Asp
    2000                 2005                 2010

ctg agt  gaa acc acc tct gca  ttc cac gaa gct aac  ctt gag aga      6144
Leu Ser  Glu Thr Thr Ser Ala  Phe His Glu Ala Asn  Leu Glu Arg
    2015                 2020                 2025

tcc tct  ggc cta gga gtg agc  ggc agc act ttg aca  ttt caa gaa      6189
Ser Ser  Gly Leu Gly Val Ser  Gly Ser Thr Leu Thr  Phe Gln Glu
    2030                 2035                 2040

ggc gag  gcg tcc gct gcc cca  gaa gtg agt gga gaa  tcc acc acc      6234
Gly Glu  Ala Ser Ala Ala Pro  Glu Val Ser Gly Glu  Ser Thr Thr
    2045                 2050                 2055

acc agt  gat gtg ggg aca gag  gca cca ggc ttg cct  tca gcc act      6279
Thr Ser  Asp Val Gly Thr Glu  Ala Pro Gly Leu Pro  Ser Ala Thr
    2060                 2065                 2070

ccc acg  gct tct gga gac agg  act gaa atc agc gga  gac ctg tct      6324
Pro Thr  Ala Ser Gly Asp Arg  Thr Glu Ile Ser Gly  Asp Leu Ser
    2075                 2080                 2085

ggt cac  acc tcg cag ctg ggc  gtt gtc atc agc acc  agc atc cca      6369
Gly His  Thr Ser Gln Leu Gly  Val Val Ile Ser Thr  Ser Ile Pro
    2090                 2095                 2100

gag tct  gag tgg acc cag cag  acc cag cgc cct gca  gag acg cat      6414
Glu Ser  Glu Trp Thr Gln Gln  Thr Gln Arg Pro Ala  Glu Thr His
    2105                 2110                 2115

cta gaa  att gag tcc tca agc  ctc ctg tac tca gga  gaa gag act      6459
Leu Glu  Ile Glu Ser Ser Ser  Leu Leu Tyr Ser Gly  Glu Glu Thr
    2120                 2125                 2130

cac aca  gtc gaa aca gcc acc  tcc cca aca gat gct  tcc atc cca      6504
```

```
His Thr  Val Glu Thr Ala Thr  Ser Pro Thr Asp Ala  Ser Ile Pro
    2135                 2140                 2145

gct tct  ccg gaa tgg aaa cgt  gaa tca gaa tca act  gct gca gac      6549
Ala Ser  Pro Glu Trp Lys Arg  Glu Ser Glu Ser Thr  Ala Ala Asp
    2150                 2155                 2160

cag gag  gta tgt gag gag ggc  tgg aac aag tac cag  ggc cac tgt      6594
Gln Glu  Val Cys Glu Glu Gly  Trp Asn Lys Tyr Gln  Gly His Cys
    2165                 2170                 2175

tac cgc  cac ttc ccg gac cgc  gag acc tgg gtg gat  gct gag cgc      6639
Tyr Arg  His Phe Pro Asp Arg  Glu Thr Trp Val Asp  Ala Glu Arg
    2180                 2185                 2190

cgg tgt  cgg gag cag cag tca  cac ctg agc agc atc  gtc acc ccc      6684
Arg Cys  Arg Glu Gln Gln Ser  His Leu Ser Ser Ile  Val Thr Pro
    2195                 2200                 2205

gag gag  cag gag ttt gtc aac  aac aat gcc caa gac  tac cag tgg      6729
Glu Glu  Gln Glu Phe Val Asn  Asn Asn Ala Gln Asp  Tyr Gln Trp
    2210                 2215                 2220

atc ggc  ctg aac gac agg acc  atc gaa ggg gac ttc  cgc tgg tca      6774
Ile Gly  Leu Asn Asp Arg Thr  Ile Glu Gly Asp Phe  Arg Trp Ser
    2225                 2230                 2235

gat gga  cac ccc atg caa ttt  gag aac tgg cgc ccc  aac cag cct      6819
Asp Gly  His Pro Met Gln Phe  Glu Asn Trp Arg Pro  Asn Gln Pro
    2240                 2245                 2250

gac aac  ttt ttt gcc gct gga  gag gac tgt gtg gtg  atg atc tgg      6864
Asp Asn  Phe Phe Ala Ala Gly  Glu Asp Cys Val Val  Met Ile Trp
    2255                 2260                 2265

cac gag  aag ggc gag tgg aat  gat gtt ccc tgc aat  tac cac ctc      6909
```

His Glu Lys Gly Glu Trp Asn Asp Val Pro Cys Asn Tyr His Leu
2270 2275 2280

ccc ttc acg tgt aaa aag ggc aca gcc acc acc tac aaa cgc aga 6954
Pro Phe Thr Cys Lys Lys Gly Thr Ala Thr Thr Tyr Lys Arg Arg
2285 2290 2295

cta cag aag cgg agc tca cgg cac cct cgg agg agc cgc ccc agc 6999
Leu Gln Lys Arg Ser Ser Arg His Pro Arg Arg Ser Arg Pro Ser
2300 2305 2310

aca gcc cac tga gaagagcttc caggacgcac ccaggacgct gagcccagga 7051
Thr Ala His
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<212> PRT
<213> Homo sapiens

<400> 20

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20 25 30

Ile Pro Gln Pro Ser Pro Leu Arg Val Leu Leu Gly Thr Ser Leu Thr

35 40 45

Ile Pro Cys Tyr Phe Ile Asp Pro Met His Pro Val Thr Thr Ala Pro
50 55 60

Ser Thr Ala Pro Leu Ala Pro Arg Ile Lys Trp Ser Arg Val Ser Lys
65 70 75 80

Glu Lys Glu Val Val Leu Leu Val Ala Thr Glu Gly Arg Val Arg Val
85 90 95

Asn Ser Ala Tyr Gln Asp Lys Val Ser Leu Pro Asn Tyr Pro Ala Ile
100 105 110

Pro Ser Asp Ala Thr Leu Glu Val Gln Ser Leu Arg Ser Asn Asp Ser
115 120 125

Gly Val Tyr Arg Cys Glu Val Met His Gly Ile Glu Asp Ser Glu Ala
130 135 140

Thr Leu Glu Val Val Val Lys Gly Ile Val Phe His Tyr Arg Ala Ile
145 150 155 160

Ser Thr Arg Tyr Thr Leu Asp Phe Asp Arg Ala Gln Arg Ala Cys Leu
165 170 175

Gln Asn Ser Ala Ile Ile Ala Thr Pro Glu Gln Leu Gln Ala Ala Tyr

180 185 190

Glu Asp Gly Phe His Gln Cys Asp Ala Gly Trp Leu Ala Asp Gln Thr
195 200 205

Val Arg Tyr Pro Ile His Thr Pro Arg Glu Gly Cys Tyr Gly Asp Lys
210 215 220

Asp Glu Phe Pro Gly Val Arg Thr Tyr Gly Ile Arg Asp Thr Asn Glu
225 230 235 240

Thr Tyr Asp Val Tyr Cys Phe Ala Glu Glu Met Glu Gly Glu Val Phe
245 250 255

Tyr Ala Thr Ser Pro Glu Lys Phe Thr Phe Gln Glu Ala Ala Asn Glu
260 265 270

Cys Arg Arg Leu Gly Ala Arg Leu Ala Thr Thr Gly His Val Tyr Leu
275 280 285

Ala Trp Gln Ala Gly Met Asp Met Cys Ser Ala Gly Trp Leu Ala Asp
290 295 300

Arg Ser Val Arg Tyr Pro Ile Ser Lys Ala Arg Pro Asn Cys Gly Gly
305 310 315 320

Asn Leu Leu Gly Val Arg Thr Val Tyr Val His Ala Asn Gln Thr Gly

325 330 335

Tyr Pro Asp Pro Ser Ser Arg Tyr Asp Ala Ile Cys Tyr Thr Gly Glu
340 345 350

Asp Phe Val Asp Ile Pro Glu Asn Phe Phe Gly Val Gly Gly Glu Glu
355 360 365

Asp Ile Thr Val Gln Thr Val Thr Trp Pro Asp Met Glu Leu Pro Leu
370 375 380

Pro Arg Asn Ile Thr Glu Gly Glu Ala Arg Gly Ser Val Ile Leu Thr
385 390 395 400

Val Lys Pro Ile Phe Glu Val Ser Pro Ser Pro Leu Glu Pro Glu Glu
405 410 415

Pro Phe Thr Phe Ala Pro Glu Ile Gly Ala Thr Ala Phe Ala Glu Val
420 425 430

Glu Asn Glu Thr Gly Glu Ala Thr Arg Pro Trp Gly Phe Pro Thr Pro
435 440 445

Gly Leu Gly Pro Ala Thr Ala Phe Thr Ser Glu Asp Leu Val Val Gln
450 455 460

Val Thr Ala Val Pro Gly Gln Pro His Leu Pro Gly Gly Val Val Phe

465 470 475 480

His Tyr Arg Pro Gly Pro Thr Arg Tyr Ser Leu Thr Phe Glu Glu Ala
485 490 495

Gln Gln Ala Cys Pro Gly Thr Gly Ala Val Ile Ala Ser Pro Glu Gln
500 505 510

Leu Gln Ala Ala Tyr Glu Ala Gly Tyr Glu Gln Cys Asp Ala Gly Trp
515 520 525

Leu Arg Asp Gln Thr Val Arg Tyr Pro Ile Val Ser Pro Arg Thr Pro
530 535 540

Cys Val Gly Asp Lys Asp Ser Ser Pro Gly Val Arg Thr Tyr Gly Val
545 550 555 560

Arg Pro Ser Thr Glu Thr Tyr Asp Val Tyr Cys Phe Val Asp Arg Leu
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Glu Gly Glu Val Phe Phe Ala Thr Arg Leu Glu Gln Phe Thr Phe Gln
580 585 590

Glu Ala Leu Glu Phe Cys Glu Ser His Asn Ala Thr Ala Thr Thr Gly
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Gln Leu Tyr Ala Ala Trp Ser Arg Gly Leu Asp Lys Cys Tyr Ala Gly

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Trp Leu Ala Asp Gly Ser Leu Arg Tyr Pro Ile Val Thr Pro Arg Pro
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Ala Cys Gly Gly Asp Lys Pro Gly Val Arg Thr Val Tyr Leu Tyr Pro
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Asn Gln Thr Gly Leu Pro Asp Pro Leu Ser Arg His His Ala Phe Cys
660 665 670

Phe Arg Gly Ile Ser Ala Val Pro Ser Pro Gly Glu Glu Glu Gly Gly
675 680 685

Thr Pro Thr Ser Pro Ser Gly Val Glu Glu Trp Ile Val Thr Gln Val
690 695 700

Val Pro Gly Val Ala Ala Val Pro Val Glu Glu Glu Thr Thr Ala Val
705 710 715 720

Pro Ser Gly Glu Thr Thr Ala Ile Leu Glu Phe Thr Thr Glu Pro Glu
725 730 735

Asn Gln Thr Glu Trp Glu Pro Ala Tyr Thr Pro Val Gly Thr Ser Pro
740 745 750

Leu Pro Gly Ile Leu Pro Thr Trp Pro Pro Thr Gly Ala Glu Thr Glu

755 760 765

Glu Ser Thr Glu Gly Pro Ser Ala Thr Glu Val Pro Ser Ala Ser Glu
770 775 780

Glu Pro Ser Pro Ser Glu Val Pro Phe Pro Ser Glu Glu Pro Ser Pro
785 790 795 800

Ser Glu Glu Pro Phe Pro Ser Val Arg Pro Phe Pro Ser Val Glu Leu
805 810 815

Phe Pro Ser Glu Glu Pro Phe Pro Ser Lys Glu Pro Ser Pro Ser Glu
820 825 830

Glu Pro Ser Ala Ser Glu Glu Pro Tyr Thr Pro Ser Pro Pro Glu Pro
835 840 845

Ser Trp Thr Glu Leu Pro Ser Ser Gly Glu Glu Ser Gly Ala Pro Asp
850 855 860

Val Ser Gly Asp Phe Thr Gly Ser Gly Asp Val Ser Gly His Leu Asp
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900 905 910

Val Glu Ser Gly Leu Pro Ser Gly Asp Glu Glu Arg Ile Glu Trp Pro
915 920 925

Ser Thr Pro Thr Val Gly Glu Leu Pro Ser Gly Ala Glu Ile Leu Glu
930 935 940

Gly Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro Ser Gly Glu
945 950 955 960

Val Leu Glu Thr Ser Ala Ser Gly Val Gly Asp Leu Ser Gly Leu Pro
965 970 975

Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser
980 985 990

Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Thr Ala Pro Gly Val Glu
995 1000 1005

Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Thr Ala
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Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu
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Glu Thr Thr Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser

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1070 1075 1080

Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr Ala
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Ala Pro Gly Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val
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Ser Gly Glu Val Leu Glu Thr Ala Ala Pro Gly Val Glu Asp Ile
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Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Leu Glu Thr
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Pro Ser Gly Glu Val Leu Glu Thr Ala Ala Pro Gly Val Glu Asp
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Val Glu Asp Ile Ser Gly Leu Pro Ser Gly Glu Val Val Glu Thr
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Pro Ser Gly Glu Glu Val Leu Glu Ile Ser Ala Ser Gly Phe Gly
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Ala Ser Glu Val Gly Thr Asp Leu Ser Gly Leu Pro Ser Gly Arg

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Phe Ser Gly Leu Pro Ser Gly Phe Pro Thr Val Ser Leu Val Asp
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Ser Thr Leu Val Glu Val Val Thr Ala Ser Thr Ala Ser Glu Leu
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Val Ser Leu Val Asp Arg Thr Leu Val Glu Ser Val Thr Gln Ala
1820 1825 1830

Pro Thr Ala Gln Glu Ala Gly Glu Gly Pro Ser Gly Ile Leu Glu
1835 1840 1845

Leu Ser Gly Ala His Ser Gly Ala Pro Asp Met Ser Gly Glu His

1850 1855 1860

Ser Gly Phe Leu Asp Leu Ser Gly Leu Gln Ser Gly Leu Ile Glu
1865 1870 1875

Pro Ser Gly Glu Pro Pro Gly Thr Pro Tyr Phe Ser Gly Asp Phe
1880 1885 1890

Ala Ser Thr Thr Asn Val Ser Gly Glu Ser Ser Val Ala Met Gly
1895 1900 1905

Thr Ser Gly Glu Ala Ser Gly Leu Pro Glu Val Thr Leu Ile Thr
1910 1915 1920

Ser Glu Phe Val Glu Gly Val Thr Glu Pro Thr Ile Ser Gln Glu
1925 1930 1935

Leu Gly Gln Arg Pro Pro Val Thr His Thr Pro Gln Leu Phe Glu
1940 1945 1950

Ser Ser Gly Lys Val Ser Thr Ala Gly Asp Ile Ser Gly Ala Thr
1955 1960 1965

Pro Val Leu Pro Gly Ser Gly Val Glu Val Ser Ser Val Pro Glu
1970 1975 1980

Ser Ser Ser Glu Thr Ser Ala Tyr Pro Glu Ala Gly Phe Gly Ala

1985 1990 1995

Ser Ala Ala Pro Glu Ala Ser Arg Glu Asp Ser Gly Ser Pro Asp
2000 2005 2010

Leu Ser Glu Thr Thr Ser Ala Phe His Glu Ala Asn Leu Glu Arg
2015 2020 2025

Ser Ser Gly Leu Gly Val Ser Gly Ser Thr Leu Thr Phe Gln Glu
2030 2035 2040

Gly Glu Ala Ser Ala Ala Pro Glu Val Ser Gly Glu Ser Thr Thr
2045 2050 2055

Thr Ser Asp Val Gly Thr Glu Ala Pro Gly Leu Pro Ser Ala Thr
2060 2065 2070

Pro Thr Ala Ser Gly Asp Arg Thr Glu Ile Ser Gly Asp Leu Ser
2075 2080 2085

Gly His Thr Ser Gln Leu Gly Val Val Ile Ser Thr Ser Ile Pro
2090 2095 2100

Glu Ser Glu Trp Thr Gln Gln Thr Gln Arg Pro Ala Glu Thr His
2105 2110 2115

Leu Glu Ile Glu Ser Ser Ser Leu Leu Tyr Ser Gly Glu Glu Thr

2120 2125 2130

His Thr Val Glu Thr Ala Thr Ser Pro Thr Asp Ala Ser Ile Pro
2135 2140 2145

Ala Ser Pro Glu Trp Lys Arg Glu Ser Glu Ser Thr Ala Ala Asp
2150 2155 2160

Gln Glu Val Cys Glu Glu Gly Trp Asn Lys Tyr Gln Gly His Cys
2165 2170 2175

Tyr Arg His Phe Pro Asp Arg Glu Thr Trp Val Asp Ala Glu Arg
2180 2185 2190

Arg Cys Arg Glu Gln Gln Ser His Leu Ser Ser Ile Val Thr Pro
2195 2200 2205

Glu Glu Gln Glu Phe Val Asn Asn Asn Ala Gln Asp Tyr Gln Trp
2210 2215 2220

Ile Gly Leu Asn Asp Arg Thr Ile Glu Gly Asp Phe Arg Trp Ser
2225 2230 2235

Asp Gly His Pro Met Gln Phe Glu Asn Trp Arg Pro Asn Gln Pro
2240 2245 2250

Asp Asn Phe Phe Ala Ala Gly Glu Asp Cys Val Val Met Ile Trp

2255 2260 2265

His Glu Lys Gly Glu Trp Asn Asp Val Pro Cys Asn Tyr His Leu
2270 2275 2280

Pro Phe Thr Cys Lys Lys Gly Thr Ala Thr Thr Tyr Lys Arg Arg
2285 2290 2295

Leu Gln Lys Arg Ser Ser Arg His Pro Arg Arg Ser Arg Pro Ser
2300 2305 2310

Thr Ala His
2315

<210> 21
<211> 1108
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (143)..(1096)

<400> 21
gagtgagtga gagggcagag gaaatactca atctgtgcca ctcactgcct tgagcctgct 60

tcctcactcc aggactgcca gaggctcact cccttgagcc tgcttcctca ctccaggact 120

gccagaggaa gcaatcacca aa atg aag act gct tta att ttg ctc agc att 172
Met Lys Thr Ala Leu Ile Leu Leu Ser Ile

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                    1               5                  10

ttg gga atg gcc tgt gct ttc tca atg aaa aat ttg cat cga aga gtc      220
Leu Gly Met Ala Cys Ala Phe Ser Met Lys Asn Leu His Arg Arg Val
                15                  20                  25

aaa ata gag gat tct gaa gaa aat ggg gtc ttt aag tac agg cca cga      268
Lys Ile Glu Asp Ser Glu Glu Asn Gly Val Phe Lys Tyr Arg Pro Arg
            30                  35                  40

tat tat ctt tac aag cat gcc tac ttt tat cct cat tta aaa cga ttt      316
Tyr Tyr Leu Tyr Lys His Ala Tyr Phe Tyr Pro His Leu Lys Arg Phe
        45                  50                  55

cca gtt cag ggc agt agt gac tca tcc gaa gaa aat gga gat gac agt      364
Pro Val Gln Gly Ser Ser Asp Ser Ser Glu Glu Asn Gly Asp Asp Ser
    60                  65                  70

tca gaa gag gag gag gaa gaa gag gag act tca aat gaa gga gaa aac      412
Ser Glu Glu Glu Glu Glu Glu Glu Glu Thr Ser Asn Glu Gly Glu Asn
75                  80                  85                  90

aat gaa gaa tcg aat gaa gat gaa gac tct gag gct gag aat acc aca      460
Asn Glu Glu Ser Asn Glu Asp Glu Asp Ser Glu Ala Glu Asn Thr Thr
                95                  100                 105

ctt tct gct aca aca ctg ggc tat gga gag gac gcc acg cct ggc aca      508
Leu Ser Ala Thr Thr Leu Gly Tyr Gly Glu Asp Ala Thr Pro Gly Thr
            110                 115                 120

ggg tat aca ggg tta gct gca atc cag ctt ccc aag aag gct ggg gat      556
Gly Tyr Thr Gly Leu Ala Ala Ile Gln Leu Pro Lys Lys Ala Gly Asp
        125                 130                 135

ata aca aac aaa gct aca aaa gag aag gaa agt gat gaa gaa gaa gag      604
Ile Thr Asn Lys Ala Thr Lys Glu Lys Glu Ser Asp Glu Glu Glu Glu
```

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    140                 145                 150

gag gaa gag gaa gga aat gaa aac gaa gaa agc gaa gca gaa gtg gat      652
Glu Glu Glu Glu Gly Asn Glu Asn Glu Glu Ser Glu Ala Glu Val Asp
155                 160                 165                 170

gaa aac gaa caa ggc ata aac ggc acc agt acc aac agc aca gag gca      700
Glu Asn Glu Gln Gly Ile Asn Gly Thr Ser Thr Asn Ser Thr Glu Ala
                175                 180                 185

gaa aac ggc aac ggc agc agc gga gga gac aat gga gaa gaa ggg gaa      748
Glu Asn Gly Asn Gly Ser Ser Gly Gly Asp Asn Gly Glu Glu Gly Glu
            190                 195                 200

gaa gaa agt gtc act gga gcc aat gca gaa ggc acc aca gag acc gga      796
Glu Glu Ser Val Thr Gly Ala Asn Ala Glu Gly Thr Thr Glu Thr Gly
        205                 210                 215

ggg cag ggc aag ggc acc tcg aag aca aca acc tct cca aat ggt ggg      844
Gly Gln Gly Lys Gly Thr Ser Lys Thr Thr Thr Ser Pro Asn Gly Gly
    220                 225                 230

ttt gaa cct aca acc cca cca caa gtc tat aga acc act tcc cca cct      892
Phe Glu Pro Thr Thr Pro Pro Gln Val Tyr Arg Thr Thr Ser Pro Pro
235                 240                 245                 250

ttt ggg aaa acc acc acc gtt gaa tac gag ggg gag tac gaa tac acg      940
Phe Gly Lys Thr Thr Thr Val Glu Tyr Glu Gly Glu Tyr Glu Tyr Thr
                255                 260                 265

ggc gtc aat gaa tac gac aat gga tat gaa atc tat gaa agt gag aac      988
Gly Val Asn Glu Tyr Asp Asn Gly Tyr Glu Ile Tyr Glu Ser Glu Asn
            270                 275                 280

ggg gaa cct cgt ggg gac aat tac cga gcc tat gaa gat gag tac agc     1036
Gly Glu Pro Arg Gly Asp Asn Tyr Arg Ala Tyr Glu Asp Glu Tyr Ser
```

285 290 295

tac ttt aaa gga caa ggc tac gat ggc tat gat ggt cag aat tac tac 1084
Tyr Phe Lys Gly Gln Gly Tyr Asp Gly Tyr Asp Gly Gln Asn Tyr Tyr
300 305 310

cac cac cag tga agctccagcc tg 1108
His His Gln
315

<210> 22
<211> 317
<212> PRT
<213> Homo sapiens

<400> 22

Met Lys Thr Ala Leu Ile Leu Leu Ser Ile Leu Gly Met Ala Cys Ala
1 5 10 15

Phe Ser Met Lys Asn Leu His Arg Arg Val Lys Ile Glu Asp Ser Glu
20 25 30

Glu Asn Gly Val Phe Lys Tyr Arg Pro Arg Tyr Tyr Leu Tyr Lys His
35 40 45

Ala Tyr Phe Tyr Pro His Leu Lys Arg Phe Pro Val Gln Gly Ser Ser
50 55 60

Asp Ser Ser Glu Glu Asn Gly Asp Asp Ser Ser Glu Glu Glu Glu Glu
65 70 75 80

Glu Glu Glu Thr Ser Asn Glu Gly Glu Asn Asn Glu Glu Ser Asn Glu
85 90 95

Asp Glu Asp Ser Glu Ala Glu Asn Thr Thr Leu Ser Ala Thr Thr Leu
100 105 110

Gly Tyr Gly Glu Asp Ala Thr Pro Gly Thr Gly Tyr Thr Gly Leu Ala
115 120 125

Ala Ile Gln Leu Pro Lys Lys Ala Gly Asp Ile Thr Asn Lys Ala Thr
130 135 140

Lys Glu Lys Glu Ser Asp Glu Glu Glu Glu Glu Glu Glu Glu Gly Asn
145 150 155 160

Glu Asn Glu Glu Ser Glu Ala Glu Val Asp Glu Asn Glu Gln Gly Ile
165 170 175

Asn Gly Thr Ser Thr Asn Ser Thr Glu Ala Glu Asn Gly Asn Gly Ser
180 185 190

Ser Gly Gly Asp Asn Gly Glu Glu Gly Glu Glu Glu Ser Val Thr Gly
195 200 205

Ala Asn Ala Glu Gly Thr Thr Glu Thr Gly Gly Gln Gly Lys Gly Thr
210 215 220

Ser Lys Thr Thr Thr Ser Pro Asn Gly Gly Phe Glu Pro Thr Thr Pro
225 230 235 240

Pro Gln Val Tyr Arg Thr Thr Ser Pro Pro Phe Gly Lys Thr Thr Thr
245 250 255

Val Glu Tyr Glu Gly Glu Tyr Glu Tyr Thr Gly Val Asn Glu Tyr Asp
260 265 270

Asn Gly Tyr Glu Ile Tyr Glu Ser Glu Asn Gly Glu Pro Arg Gly Asp
275 280 285

Asn Tyr Arg Ala Tyr Glu Asp Glu Tyr Ser Tyr Phe Lys Gly Gln Gly
290 295 300

Tyr Asp Gly Tyr Asp Gly Gln Asn Tyr Tyr His His Gln
305 310 315

<210> 23
<211> 498
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (19)..(321)

<400> 23

cgcagccacc gagacacc atg aga gcc ctc aca ctc ctc gcc cta ttg gcc 51
Met Arg Ala Leu Thr Leu Leu Ala Leu Leu Ala
1 5 10

ctg gcc gca ctt tgc atc gct ggc cag gca ggt gcg aag ccc agc ggt 99
Leu Ala Ala Leu Cys Ile Ala Gly Gln Ala Gly Ala Lys Pro Ser Gly
15 20 25

gca gag tcc agc aaa ggt gca gcc ttt gtg tcc aag cag gag ggc agc 147
Ala Glu Ser Ser Lys Gly Ala Ala Phe Val Ser Lys Gln Glu Gly Ser
30 35 40

gag gta gtg aag aga ccc agg cgc tac ctg tat caa tgg ctg gga gcc 195
Glu Val Val Lys Arg Pro Arg Arg Tyr Leu Tyr Gln Trp Leu Gly Ala
45 50 55

cca gtc ccc tac ccg gat ccc ctg gag ccc agg agg gag gtg tgt gag 243
Pro Val Pro Tyr Pro Asp Pro Leu Glu Pro Arg Arg Glu Val Cys Glu
60 65 70 75

ctc aat ccg gac tgt gac gag ttg gct gac cac atc ggc ttt cag gag 291
Leu Asn Pro Asp Cys Asp Glu Leu Ala Asp His Ile Gly Phe Gln Glu
80 85 90

gcc tat cgg cgc ttc tac ggc ccg gtc tag ggtgtcgctc tgctggcctg 341
Ala Tyr Arg Arg Phe Tyr Gly Pro Val
95 100

gccggcaacc ccagttctgc tcctctccag gcacccttct ttcctcttcc ccttgccctt 401

gccctgacct cccagcccta tggatgtggg gtccccatca tcccagctgc tcccaaataa 461

actccagaag aggaatctga aaaaaaaaaa aaaaaaa 498

<210> 24
<211> 100
<212> PRT
<213> Homo sapiens

<400> 24

Met Arg Ala Leu Thr Leu Leu Ala Leu Leu Ala Leu Ala Ala Leu Cys
1 5 10 15

Ile Ala Gly Gln Ala Gly Ala Lys Pro Ser Gly Ala Glu Ser Ser Lys
20 25 30

Gly Ala Ala Phe Val Ser Lys Gln Glu Gly Ser Glu Val Val Lys Arg
35 40 45

Pro Arg Arg Tyr Leu Tyr Gln Trp Leu Gly Ala Pro Val Pro Tyr Pro
50 55 60

Asp Pro Leu Glu Pro Arg Arg Glu Val Cys Glu Leu Asn Pro Asp Cys
65 70 75 80

Asp Glu Leu Ala Asp His Ile Gly Phe Gln Glu Ala Tyr Arg Arg Phe
85 90 95

Tyr Gly Pro Val
100

<210> 25

<211> 2383
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (320)..(1825)

<400> 25
ctccttcaag ccctcagtca gttgtgcagg agaaaggggg cggttggctt tctcctttca 60

agaacgagtt attttcagct gctgactgga gacggtgcac gtctggatac gagagcattt 120

ccactatggg actggataca aacacacacc cggcagactt caagagtctc agactgagga 180

gaaagccttt ccttctgctg ctactgctgc tgccgctgct tttgaaagtc cactcctttc 240

atggtttttc ctgccaaacc agaggcacct ttgctgctgc cgctgttctc tttggtgtca 300

ttcagcggct ggccagagg atg aga ctc ccc aaa ctc ctc act ttc ttg ctt 352
Met Arg Leu Pro Lys Leu Leu Thr Phe Leu Leu
1 5 10

tgg tac ctg gct tgg ctg gac ctg gaa ttc atc tgc act gtg ttg ggt 400
Trp Tyr Leu Ala Trp Leu Asp Leu Glu Phe Ile Cys Thr Val Leu Gly
15 20 25

gcc cct gac ttg ggc cag aga ccc cag ggg acc agg cca gga ttg gcc 448
Ala Pro Asp Leu Gly Gln Arg Pro Gln Gly Thr Arg Pro Gly Leu Ala
30 35 40

aaa gca gag gcc aag gag agg ccc ccc ctg gcc cgg aac gtc ttc agg 496
Lys Ala Glu Ala Lys Glu Arg Pro Pro Leu Ala Arg Asn Val Phe Arg
45 50 55

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cca ggg ggt cac agc tat ggt ggg ggg gcc acc aat gcc aat gcc agg      544
Pro Gly Gly His Ser Tyr Gly Gly Gly Ala Thr Asn Ala Asn Ala Arg
60                  65                  70                  75

gca aag gga ggc acc ggg cag aca gga ggc ctg aca cag ccc aag aag      592
Ala Lys Gly Gly Thr Gly Gln Thr Gly Gly Leu Thr Gln Pro Lys Lys
                80                  85                  90

gat gaa ccc aaa aag ctg ccc ccc aga ccg ggc ggc cct gaa ccc aag      640
Asp Glu Pro Lys Lys Leu Pro Pro Arg Pro Gly Gly Pro Glu Pro Lys
            95                  100                 105

cca gga cac cct ccc caa aca agg cag gct aca gcc cgg act gtg acc      688
Pro Gly His Pro Pro Gln Thr Arg Gln Ala Thr Ala Arg Thr Val Thr
        110                 115                 120

cca aaa gga cag ctt ccc gga ggc aag gca ccc cca aaa gca gga tct      736
Pro Lys Gly Gln Leu Pro Gly Gly Lys Ala Pro Pro Lys Ala Gly Ser
    125                 130                 135

gtc ccc agc tcc ttc ctg ctg aag aag gcc agg gag ccc ggg ccc cca      784
Val Pro Ser Ser Phe Leu Leu Lys Lys Ala Arg Glu Pro Gly Pro Pro
140                 145                 150                 155

cga gag ccc aag gag ccg ttt cgc cca ccc ccc atc aca ccc cac gag      832
Arg Glu Pro Lys Glu Pro Phe Arg Pro Pro Pro Ile Thr Pro His Glu
                160                 165                 170

tac atg ctc tcg ctg tac agg acg ctg tcc gat gct gac aga aag gga      880
Tyr Met Leu Ser Leu Tyr Arg Thr Leu Ser Asp Ala Asp Arg Lys Gly
            175                 180                 185

ggc aac agc agc gtg aag ttg gag gct ggc ctg gcc aac acc atc acc      928
Gly Asn Ser Ser Val Lys Leu Glu Ala Gly Leu Ala Asn Thr Ile Thr
        190                 195                 200
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agc ttt att gac aaa ggg caa gat gac cga ggt ccc gtg gtc agg aag      976
Ser Phe Ile Asp Lys Gly Gln Asp Asp Arg Gly Pro Val Val Arg Lys
    205                 210                 215

cag agg tac gtg ttt gac att agt gcc ctg gag aag gat ggg ctg ctg     1024
Gln Arg Tyr Val Phe Asp Ile Ser Ala Leu Glu Lys Asp Gly Leu Leu
220                 225                 230                 235

ggg gcc gag ctg cgg atc ttg cgg aag aag ccc tcg gac acg gcc aag     1072
Gly Ala Glu Leu Arg Ile Leu Arg Lys Lys Pro Ser Asp Thr Ala Lys
                240                 245                 250

cca gcg gcc ccc gga ggc ggg cgg gct gcc cag ctg aag ctg tcc agc     1120
Pro Ala Ala Pro Gly Gly Gly Arg Ala Ala Gln Leu Lys Leu Ser Ser
            255                 260                 265

tgc ccc agc ggc cgg cag ccg gcc tcc ttg ctg gat gtg cgc tcc gtg     1168
Cys Pro Ser Gly Arg Gln Pro Ala Ser Leu Leu Asp Val Arg Ser Val
        270                 275                 280

cca ggc ctg gac gga tct ggc tgg gag gtg ttc gac atc tgg aag ctc     1216
Pro Gly Leu Asp Gly Ser Gly Trp Glu Val Phe Asp Ile Trp Lys Leu
    285                 290                 295

ttc cga aac ttt aag aac tcg gcc cag ctg tgc ctg gag ctg gag gcc     1264
Phe Arg Asn Phe Lys Asn Ser Ala Gln Leu Cys Leu Glu Leu Glu Ala
300                 305                 310                 315

tgg gaa cgg ggc agg gcc gtg gac ctc cgt ggc ctg ggc ttc gac cgc     1312
Trp Glu Arg Gly Arg Ala Val Asp Leu Arg Gly Leu Gly Phe Asp Arg
                320                 325                 330

gcc gcc cgg cag gtc cac gag aag gcc ctg ttc ctg gtg ttt ggc cgc     1360
Ala Ala Arg Gln Val His Glu Lys Ala Leu Phe Leu Val Phe Gly Arg
            335                 340                 345
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acc aag aaa cgg gac ctg ttc ttt aat gag att aag gcc cgc tct ggc     1408
Thr Lys Lys Arg Asp Leu Phe Phe Asn Glu Ile Lys Ala Arg Ser Gly
        350                 355                 360

cag gac gat aag acc gtg tat gag tac ctg ttc agc cag cgg cga aaa     1456
Gln Asp Asp Lys Thr Val Tyr Glu Tyr Leu Phe Ser Gln Arg Arg Lys
    365                 370                 375

cgg cgg gcc cca ctg gcc act cgc cag ggc aag cga ccc agc aag aac     1504
Arg Arg Ala Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn
380                 385                 390                 395

ctt aag gct cgc tgc agt cgg aag gca ctg cat gtc aac ttc aag gac     1552
Leu Lys Ala Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp
                400                 405                 410

atg ggc tgg gac gac tgg atc atc gca ccc ctt gag tac gag gct ttc     1600
Met Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe
            415                 420                 425

cac tgc gag ggg ctg tgc gag ttc cca ttg cgc tcc cac ctg gag ccc     1648
His Cys Glu Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro
        430                 435                 440

acg aat cat gca gtc atc cag acc ctg atg aac tcc atg gac ccc gag     1696
Thr Asn His Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu
    445                 450                 455

tcc aca cca ccc acc tgc tgt gtg ccc acg cgg ctg agt ccc atc agc     1744
Ser Thr Pro Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser
460                 465                 470                 475

atc ctc ttc att gac tct gcc aac aac gtg gtg tat aag cag tat gag     1792
Ile Leu Phe Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu
                480                 485                 490
```

gac atg gtc gtg gag tcg tgt ggc tgc agg tag cagcactggc cctctgtctt 1845
Asp Met Val Val Glu Ser Cys Gly Cys Arg
495 500

cctgggtggc acatcccaag agcccccttcc tgcactcctg gaatcacaga ggggtcagga 1905

agctgtggca ggagcatcta cacagcttgg gtgaaagggg attccaataa gcttgctcgc 1965

tctctgagtg tgacttgggc taaaggcccc cttttatcca caagttcccc tggctgagga 2025

ttgctgcccg tctgctgatg tgaccagtgg caggcacagg tccagggaga cagactctga 2085

atgggactga gtcccaggaa acagtgcttt ccgatgagac tcagcccacc atttctcctc 2145

acctgggcct tctcagcctc tggactctcc taagcacctc tcaggagagc cacaggtgcc 2205

actgcctcct caaatcacat ttgtgcctgg tgacttcctg tccctgggac agttgagaag 2265

ctgactgggc aagagtggga gagaagagga gagggcttgg atagagttga ggagtgtgag 2325

gctgttagac tgttagattt aaatgtatat tgatgagata aaaagcaaaa ctgtgcct 2383

<210> 26
<211> 501
<212> PRT
<213> Homo sapiens

<400> 26

Met Arg Leu Pro Lys Leu Leu Thr Phe Leu Leu Trp Tyr Leu Ala Trp
1 5 10 15

Leu Asp Leu Glu Phe Ile Cys Thr Val Leu Gly Ala Pro Asp Leu Gly
20 25 30

Gln Arg Pro Gln Gly Thr Arg Pro Gly Leu Ala Lys Ala Glu Ala Lys
35 40 45

Glu Arg Pro Pro Leu Ala Arg Asn Val Phe Arg Pro Gly Gly His Ser
50 55 60

Tyr Gly Gly Gly Ala Thr Asn Ala Asn Ala Arg Ala Lys Gly Gly Thr
65 70 75 80

Gly Gln Thr Gly Gly Leu Thr Gln Pro Lys Lys Asp Glu Pro Lys Lys
85 90 95

Leu Pro Pro Arg Pro Gly Gly Pro Glu Pro Lys Pro Gly His Pro Pro
100 105 110

Gln Thr Arg Gln Ala Thr Ala Arg Thr Val Thr Pro Lys Gly Gln Leu
115 120 125

Pro Gly Gly Lys Ala Pro Pro Lys Ala Gly Ser Val Pro Ser Ser Phe
130 135 140

Leu Leu Lys Lys Ala Arg Glu Pro Gly Pro Pro Arg Glu Pro Lys Glu
145 150 155 160

Pro Phe Arg Pro Pro Pro Ile Thr Pro His Glu Tyr Met Leu Ser Leu
165 170 175

Tyr Arg Thr Leu Ser Asp Ala Asp Arg Lys Gly Gly Asn Ser Ser Val
180 185 190

Lys Leu Glu Ala Gly Leu Ala Asn Thr Ile Thr Ser Phe Ile Asp Lys
195 200 205

Gly Gln Asp Asp Arg Gly Pro Val Val Arg Lys Gln Arg Tyr Val Phe
210 215 220

Asp Ile Ser Ala Leu Glu Lys Asp Gly Leu Leu Gly Ala Glu Leu Arg
225 230 235 240

Ile Leu Arg Lys Lys Pro Ser Asp Thr Ala Lys Pro Ala Ala Pro Gly
245 250 255

Gly Gly Arg Ala Ala Gln Leu Lys Leu Ser Ser Cys Pro Ser Gly Arg
260 265 270

Gln Pro Ala Ser Leu Leu Asp Val Arg Ser Val Pro Gly Leu Asp Gly
275 280 285

Ser Gly Trp Glu Val Phe Asp Ile Trp Lys Leu Phe Arg Asn Phe Lys
290 295 300

Asn Ser Ala Gln Leu Cys Leu Glu Leu Glu Ala Trp Glu Arg Gly Arg
305 310 315 320

Ala Val Asp Leu Arg Gly Leu Gly Phe Asp Arg Ala Ala Arg Gln Val
325 330 335

His Glu Lys Ala Leu Phe Leu Val Phe Gly Arg Thr Lys Lys Arg Asp
340 345 350

Leu Phe Phe Asn Glu Ile Lys Ala Arg Ser Gly Gln Asp Asp Lys Thr
355 360 365

Val Tyr Glu Tyr Leu Phe Ser Gln Arg Arg Lys Arg Arg Ala Pro Leu
370 375 380

Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu Lys Ala Arg Cys
385 390 395 400

Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly Trp Asp Asp
405 410 415

Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu Gly Leu
420 425 430

Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Val
435 440 445

Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro Pro Thr
450 455 460

Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp
465 470 475 480

Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu
485 490 495

Ser Cys Gly Cys Arg
500

<210> 27
<211> 1378
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (276)..(1130)

<400> 27
ggtagcagca tccaccgggc gggaggtcgg aggcagcaag gccttaaagg ctactgagtg 60

cgccggccgt tccgtgtcca gaacctcccc tactcctccg ccttctcttc cttggccgcc 120

caccgccaag ttccgactcc ggttttcgcc tttgcaaagc ctaaggagga ggttaggaac 180

agccgcgccc ccctccctgc ggccgccgcc ccctgcctct cggctctgct ccctgccgcg 240

tgcgcctggg ccgtgcgccc cggcaggcgc cagcc atg tcg atg ctg ccg tcg 293
Met Ser Met Leu Pro Ser
1 5

ttt ggc ttt acg cag gag caa gtg gcg tgc gtg tgc gag gtt ctg cag 341
Phe Gly Phe Thr Gln Glu Gln Val Ala Cys Val Cys Glu Val Leu Gln
10 15 20

caa ggc gga aac ctg gag cgc ctg ggc agg ttc ctg tgg tca ctg ccc 389
Gln Gly Gly Asn Leu Glu Arg Leu Gly Arg Phe Leu Trp Ser Leu Pro
25 30 35

gcc tgc gac cac ctg cac aag aac gag agc gta ctc aag gcc aag gcg 437
Ala Cys Asp His Leu His Lys Asn Glu Ser Val Leu Lys Ala Lys Ala
40 45 50

gtg gtc gcc ttc cac cgc ggc aac ttc cgt gag ctc tac aag atc ctg 485
Val Val Ala Phe His Arg Gly Asn Phe Arg Glu Leu Tyr Lys Ile Leu
55 60 65 70

gag agc cac cag ttc tcg cct cac aac cac ccc aaa ctg cag caa ctg 533
Glu Ser His Gln Phe Ser Pro His Asn His Pro Lys Leu Gln Gln Leu
75 80 85

tgg ctg aag gcg cat tac gtg gag gcc gag aag ctg cgc ggc cga ccc 581
Trp Leu Lys Ala His Tyr Val Glu Ala Glu Lys Leu Arg Gly Arg Pro
90 95 100

ctg ggc gcc gtg ggc aaa tat cgg gtg cgc cga aaa ttt cca ctg ccg 629
Leu Gly Ala Val Gly Lys Tyr Arg Val Arg Arg Lys Phe Pro Leu Pro
105 110 115

cgc acc atc tgg gac ggc gag gag acc agc tac tgc ttc aag gag aag 677
Arg Thr Ile Trp Asp Gly Glu Glu Thr Ser Tyr Cys Phe Lys Glu Lys
120 125 130

tcg agg ggt gtc ctg cgg gag tgg tac gcg cac aat ccc tac cca tcg 725
Ser Arg Gly Val Leu Arg Glu Trp Tyr Ala His Asn Pro Tyr Pro Ser
135 140 145 150

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ccg cgt gag aag cgg gag ctg gcc gag gcc acc ggc ctc acc acc acc     773
Pro Arg Glu Lys Arg Glu Leu Ala Glu Ala Thr Gly Leu Thr Thr Thr
                155                 160                 165

cag gtc agc aac tgg ttt aag aac cgg agg caa aga gac cgg gcc gcg     821
Gln Val Ser Asn Trp Phe Lys Asn Arg Arg Gln Arg Asp Arg Ala Ala
            170                 175                 180

gag gcc aag gaa agg gag aac acc gaa aac aat aac tcc tcc tcc aac     869
Glu Ala Lys Glu Arg Glu Asn Thr Glu Asn Asn Asn Ser Ser Ser Asn
        185                 190                 195

aag cag aac caa ctc tct cct ctg gaa ggg ggc aag ccg ctc atg tcc     917
Lys Gln Asn Gln Leu Ser Pro Leu Glu Gly Gly Lys Pro Leu Met Ser
    200                 205                 210

agc tca gaa gag gaa ttc tca cct ccc caa agt cca gac cag aac tcg     965
Ser Ser Glu Glu Glu Phe Ser Pro Pro Gln Ser Pro Asp Gln Asn Ser
215                 220                 225                 230

gtc ctt ctg ctg cag ggc aat atg ggc cac gcc agg agc tca aac tat    1013
Val Leu Leu Leu Gln Gly Asn Met Gly His Ala Arg Ser Ser Asn Tyr
                235                 240                 245

tct ctc ccg ggc tta aca gcc tcg cag ccc agt cac ggc ctg cag acc    1061
Ser Leu Pro Gly Leu Thr Ala Ser Gln Pro Ser His Gly Leu Gln Thr
            250                 255                 260

cac cag cat cag ctc caa gac tct ctg ctc ggc ccc ctc acc tcc agt    1109
His Gln His Gln Leu Gln Asp Ser Leu Leu Gly Pro Leu Thr Ser Ser
        265                 270                 275

ctg gtg gac ttg ggg tcc taa gtggggaggg actggggcct cgaagggatt       1160
Leu Val Asp Leu Gly Ser
    280
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cctggagcag caaccactgc agcgactagg gacacttgta aatagaaatc aggaacattt 1220

ttgcagcttg tttctggagt tgtttgcgca taaaggaatg gtggactttc acaaatatct 1280

ttttaaaaat caaaaccaac agcgatctca agcttaatct cctcttctct ccaactcttt 1340

ccacttttgc attttccttc ccaatgcaga gatcaggg 1378

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<212> PRT
<213> Homo sapiens

<400> 28

Met Ser Met Leu Pro Ser Phe Gly Phe Thr Gln Glu Gln Val Ala Cys
1 5 10 15

Val Cys Glu Val Leu Gln Gln Gly Gly Asn Leu Glu Arg Leu Gly Arg
20 25 30

Phe Leu Trp Ser Leu Pro Ala Cys Asp His Leu His Lys Asn Glu Ser
35 40 45

Val Leu Lys Ala Lys Ala Val Val Ala Phe His Arg Gly Asn Phe Arg
50 55 60

Glu Leu Tyr Lys Ile Leu Glu Ser His Gln Phe Ser Pro His Asn His
65 70 75 80

Pro Lys Leu Gln Gln Leu Trp Leu Lys Ala His Tyr Val Glu Ala Glu
85 90 95

Lys Leu Arg Gly Arg Pro Leu Gly Ala Val Gly Lys Tyr Arg Val Arg
100 105 110

Arg Lys Phe Pro Leu Pro Arg Thr Ile Trp Asp Gly Glu Glu Thr Ser
115 120 125

Tyr Cys Phe Lys Glu Lys Ser Arg Gly Val Leu Arg Glu Trp Tyr Ala
130 135 140

His Asn Pro Tyr Pro Ser Pro Arg Glu Lys Arg Glu Leu Ala Glu Ala
145 150 155 160

Thr Gly Leu Thr Thr Thr Gln Val Ser Asn Trp Phe Lys Asn Arg Arg
165 170 175

Gln Arg Asp Arg Ala Ala Glu Ala Lys Glu Arg Glu Asn Thr Glu Asn
180 185 190

Asn Asn Ser Ser Ser Asn Lys Gln Asn Gln Leu Ser Pro Leu Glu Gly
195 200 205

Gly Lys Pro Leu Met Ser Ser Ser Glu Glu Glu Phe Ser Pro Pro Gln
210 215 220

Ser Pro Asp Gln Asn Ser Val Leu Leu Leu Gln Gly Asn Met Gly His
225 230 235 240

Ala Arg Ser Ser Asn Tyr Ser Leu Pro Gly Leu Thr Ala Ser Gln Pro
245 250 255

Ser His Gly Leu Gln Thr His Gln His Gln Leu Gln Asp Ser Leu Leu
260 265 270

Gly Pro Leu Thr Ser Ser Leu Val Asp Leu Gly Ser
275 280

<210> 29
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<220>
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<400> 29
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tcccggggac ggggggcact gcagttttgg ggccctgagt aactacagcc cagaagcgac 180

ctcccagttc ctccgcatcc ccagagacgg aacgatgccc ccaaagacca gccccgcccc 240

ccccaccccc gccaaagcgt ggccacagaa ggccgaggga cgcggcgggc gctgctcgag 300

gagcctccgg gctgagaggg gcggggcgtg cgcgggggag gggccgggac gccgctataa 360

aggcgcagct cggggccccg ctccggcccg ggacgcacat gtgcgcgcga cgcccggcag 420

ctgccaccgc ggggcgcagc cgagaccccg cgcctcgccc cggccggccc gcgaggcccg 480

cggcggccgc aggaggcggc atgagcagcg cgcgacagag ctgacgccgc gcccccgccg 540

gcccc atg tcc ttc gcc acg ctg cgc ccg gcg ccg ccg ggc cgc tac ctg 590
Met Ser Phe Ala Thr Leu Arg Pro Ala Pro Pro Gly Arg Tyr Leu
1 5 10 15

tac ccc gag gtg agc ccg ctg tcg gag gac gag gac cgc ggc agc gac 638
Tyr Pro Glu Val Ser Pro Leu Ser Glu Asp Glu Asp Arg Gly Ser Asp
20 25 30

agc tcg ggc tcc gac gag aaa ccc tgt cgc gtg cac gcg gcg cgc tgc 686
Ser Ser Gly Ser Asp Glu Lys Pro Cys Arg Val His Ala Ala Arg Cys
35 40 45

ggc ctc cag ggc gcc cgg cgg agg gcg ggg ggc cgg cgg gcc ggg ggc 734
Gly Leu Gln Gly Ala Arg Arg Arg Ala Gly Gly Arg Arg Ala Gly Gly
50 55 60

ggg ggg cca ggg ggc cgg cca ggc cgt gag ccc cgg cag cgg cac acg 782
Gly Gly Pro Gly Gly Arg Pro Gly Arg Glu Pro Arg Gln Arg His Thr
65 70 75

gcg aac gcg cgc gag cga gac cgc acc aac agc gtg aac acg gcc ttc 830
Ala Asn Ala Arg Glu Arg Asp Arg Thr Asn Ser Val Asn Thr Ala Phe

80 85 90 95

acg gcg ctg cgc acg ctg atc ccc acc gag ccc gcc gac cgc aag ctc 878
Thr Ala Leu Arg Thr Leu Ile Pro Thr Glu Pro Ala Asp Arg Lys Leu
100 105 110

tcc aag att gag acg ctg cgc ctg gcc tcc agc tac atc tcg cac ctg 926
Ser Lys Ile Glu Thr Leu Arg Leu Ala Ser Ser Tyr Ile Ser His Leu
115 120 125

ggc aac gtg ctg ctg gcg ggc gag gcc tgc ggc gac gga cag ccc tgc 974
Gly Asn Val Leu Leu Ala Gly Glu Ala Cys Gly Asp Gly Gln Pro Cys
130 135 140

cac tcc ggg ccc gcc ttc ttc cac gcg gcg cgc gcc ggc agc ccc ccg 1022
His Ser Gly Pro Ala Phe Phe His Ala Ala Arg Ala Gly Ser Pro Pro
145 150 155

ccg ccg ccc ccg ccg cct ccc gcc cgc gac ggc gag aac acc cag ccc 1070
Pro Pro Pro Pro Pro Pro Pro Ala Arg Asp Gly Glu Asn Thr Gln Pro
160 165 170 175

aaa cag atc tgc acc ttc tgc ctc agc aac cag aga aag ttg 1112
Lys Gln Ile Cys Thr Phe Cys Leu Ser Asn Gln Arg Lys Leu
180 185

gtgagcacgg gccgtggggc gccgaggggg gcctccaacg cgcccctcag cccacacctg 1172

ccaggcagag gaggcgaggc cacacgggca gggctcccca acagggcaca ggcaggcaca 1232

cctgtaacac aggcctgccg ggggctgggg ccttctcctg gggctcctct cgagggcgtc 1292

cctaggacac tcggctccca gtggagtgtg gagtcccctg cagggagctg catgaggggt 1352

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aacatctggg aaatttaatt ttacaatttc ggctgtgcag cagtatgctc ccctccccaa 1892

aacgcttgag ggaagctggg gagagccggg aaggaggtgc cttggcgctg gccacctgag 1952

atggcaccca gcagggaggc cagagaggcg cagactggcg ctgggctctg ccggggcctg 2012

acactcctcc ctcccctctg cag agc aag gac cgc gac aga aag aca gcg att 2065
Ser Lys Asp Arg Asp Arg Lys Thr Ala Ile
190 195

cgc agt taggaggtgg ccggcagcag ccaggaggca gacgctgctg ggggaggtgg 2121
Arg Ser
200

acgcccgggg tgactgcaga cagcccccac cttggacctg agctgggcaa ggcccaccgc 2181

aagcatgccc ccaggccagc cctggctgcg agcggggccg agggacagac ggacgtacag 2241

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atataaagtc tgaaaatttt gtataattaa aaacaaaaca gtatcttcca aatatggagg 2421

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ccacccttgg tggtcccatc ctccttgggc caagtacccc ggctccctgg gaagccccca 2541

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<210> 30
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<212> PRT
<213> Homo sapiens

<400> 30

Met Ser Phe Ala Thr Leu Arg Pro Ala Pro Pro Gly Arg Tyr Leu Tyr
1 5 10 15

Pro Glu Val Ser Pro Leu Ser Glu Asp Glu Asp Arg Gly Ser Asp Ser
20 25 30

Ser Gly Ser Asp Glu Lys Pro Cys Arg Val His Ala Ala Arg Cys Gly
35 40 45

Leu Gln Gly Ala Arg Arg Arg Ala Gly Gly Arg Arg Ala Gly Gly Gly
50 55 60

Gly Pro Gly Gly Arg Pro Gly Arg Glu Pro Arg Gln Arg His Thr Ala
65 70 75 80

Asn Ala Arg Glu Arg Asp Arg Thr Asn Ser Val Asn Thr Ala Phe Thr
85 90 95

Ala Leu Arg Thr Leu Ile Pro Thr Glu Pro Ala Asp Arg Lys Leu Ser
100 105 110

Lys Ile Glu Thr Leu Arg Leu Ala Ser Ser Tyr Ile Ser His Leu Gly
115 120 125

Asn Val Leu Leu Ala Gly Glu Ala Cys Gly Asp Gly Gln Pro Cys His
130 135 140

Ser Gly Pro Ala Phe Phe His Ala Ala Arg Ala Gly Ser Pro Pro Pro
145 150 155 160

Pro Pro Pro Pro Pro Pro Ala Arg Asp Gly Glu Asn Thr Gln Pro Lys
165 170 175

Gln Ile Cys Thr Phe Cys Leu Ser Asn Gln Arg Lys Leu Ser Lys Asp
180 185 190

Arg Asp Arg Lys Thr Ala Ile Arg Ser
195 200